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EDITORIAL

THE SCIENTIFIC METHOD

In the August 26, 1955 issue of *Science,* Dr. George R. Price had an article discussing "Science and the Supernatural," which has been quite widely quoted. Since it has been, and has been taken as Science's answer to the Psiontists—Dr. Price discussed the work of Rhine and Soal specifically—I'd like to do some answering from a third viewpoint. I'm not a psiontist; having been a magazine editor for something over half of my conscious life span, it is not precisely proper to limit my education to the term "scientist," either, although my degree is in Physics.

Dr. Price's major difficulty is that he is ignorant of the field he is discussing—the field of proof-of-existence of psi phenomena. The whole tenor of his discussion indicates that he is not aware of the long history of scientific investigation of spontaneous occurrences of psionic abilities, or is aware only of a very few instances. And that, furthermore, he is not consciously aware of what he himself means by "the scientific method"—of what he himself would, in fact, accept as proof-of existence of a phenomenon.

For example, in his discussion he specifically states that a jury of a dozen highly respected professional scientists who did *not* believe, nor want to believe, in the existence of psi forces, working under conditions such that just one honest man on the jury would reveal any trickery, would be acceptable proof-of-existence.

Dr. Price is wrong; he wouldn't accept such a report himself, and if he were consciously aware of what the essence of the scientific method is, he would know beforehand that he would not and could not accept such a report.

In the first place, precisely such things as the jury of disbelievers

have been arranged, demonstrations carried out, and the reports, after being fully and unarguably validated, have been buried as quietly as possible.

The type of psi phenomena that can best be checked with absolute assurance are those that lend themselves to weighing, measuring, photographing, and physical recording. Levitation and teleportation best fall into this group. The phenomena of telepathy, clairvoyance, et cetera, are inherently less subject to physical recording, because no man can *know* what I see, when I am looking with ordinary physical vision at an ordinary physical object. If simple normal vision can't be cross-checked, how can clairvoyance be adequately checked?

At various times in history, and particularly in the last one hundred years, different individuals have displayed spontaneously occurring abilities to levitate themselves or external objects. Some of them have been most rigorously checked; D. D. Home was only one—one who was highly publicized at the time as a mystic. The most interesting cases have been those wherein the individual who had the talent found it most objectionable, and couldn't get rid of it. (See Isaac Asimov's story of the physicist who, to his horror, developed levitation. Precisely such instances have occurred.) These individuals go to doctors, scientists, et cetera, hoping for help in being freed of their unwelcome talent. The "Flying Butler" of Ireland is one instance; neither doctor, scientist nor priest could help him rid himself of an undesired and uncontrollable tendency to levitate, and such levity is as unbecoming in a noble lord's butler as in Asimov's young professional physicist.

In still earlier centuries, of course, such abilities were promptly lethal; it was obvious that the individual had sold his soul to the Devil, and must be burned at once. (An alchemist of the time who could wave his hands—containing a bit of copper chloride—over a fire and have the flames turn a brilliant and unnatural green was in somewhat better condition. He knew how he did it, and could refrain from doing it at will. If he didn't refrain he, too, would be burned as a wizard in league with Satan.)

The evidence for psi talents is completely adequate; Dr. Rhine and Dr. Soal are, in fact, wasting their time seeking to achieve proof-of-existence. The problem, despite Dr. Price's argument, lies in a different direction entirely.

The tendency of scientists is to *say* "Show me!" They say it, and honestly and sincerely believe that that is what they want. Dr. Price in all sincerity and honesty believes that is what he is asking for; simply "Show me!"

He doesn't; if he were shown in complete detail, he wouldn't accept it. What the scientist *does* want, whether he is consciously aware of it or not, is not "Show me!" but "Show me *how!*"

The essence of the Scientific Method is the repeatable experiment. Proof-of-existence lies in *instruction in the method of doing.* It does *not* lies in a proof of existence, actually, but in a true, engineering-level operational *method.* The scientist stems from the Arabic concept of the integration of Greek Logic and Roman Engineering; it isn't science unless you can show engineering method, *and* theoretical logic.

Now engineering involves the ability of individual A to specify, with blueprints, shop-drawings, dimensions, and specification of materials, precisely how individual B can produce the unit Alpha under discussion. The Damascus armorers could specify how to produce a remarkably fine spring-steel blade; they had rule-of-thumb engineering know-how that was communicable. The Romans had rule-of-thumb engineering know-how for building bridges, aqueducts, roads, et cetera.

The scientist wants one thing more; he wants the engineering know-how of shop-drawings, specifications, et cetera, and a logical explanation that interrelates these things in a fashion that allows him to make alterations. If component F is doubled in quantity, the resultant unit will change to degree *f* in characteristic *N*. The pure engineer, of the Roman type, could not make alterations; the Damascus armorers could not alter their formulations. The scientist can.

Now the curious thing is that, necessarily, Science cannot be generated by Scientists! If Science exists *only* when there is engineering know-how and logical interrelationship—then a Scientist cannot deal with the unknown, with the not-yet-logically-related!

Like Logic, Science is necessary, but not sufficient. Logic can deduce accurately the consequences of a given set of axioms—but Logic cannot generate axioms. Logic can exist only *after* some non-logical process has generated postulates and axioms for it to work on. Euclid's geometry is perfectly logical—but the axioms have to be supplied by a non-logical process.

Science is perfectly logical—but it can operate only after a *non*-scientific method has generated the axioms and rules by which it operates.

Dr. Price is perfectly correct in saying that Psionics is not part of science—but he is totally incorrect in his specification of the conditions necessary to make it a part of science—of the conditions necessary, actually, to extend science to include it. No possible demonstration can ever make psionics acceptable to scientists. That is an absolute—as absolute as the statement "No professional murderer-for-hire can be a good citizen of the United States in 1956." By definition, these things are absolute truths. The Scientific Method has as part of its definition the requirement of the communicably-repeatable experiment; demonstrating that *I* can do X does not fulfill the definition, and, conse-

quently, does not make it "Science."

Science begins when I can *show someone else how to do it.*

Dr. Price doesn't want an iron-clad demonstration that John Doe can do X; he just imagines that he does. If Dr. Price himself were to witness such an absolute, iron-clad, perfectly protected and circumscribed experiment—he would deny it. Because if Dr. Price then reported it as fact in professional journals, he would be violating the fundamental definition of the Scientific Method. Science is a how-to-do-it book, however philosophically theoretical it may pretend to be. It's science only when it can be made communicably repeatable—which means how-to-do-it is the fundamental requirement.

The astrophysicist can't tell you how to make a star—that's self-evidently impossible. But astrophysics is science because he *can* give exact shop-drawing instructions on *how to observe* what he has observed. "If you do not believe me," he says in effect, "build a telescope according to these specifications, mount it thus, point it in this way, and look for yourself." Galileo, inviting his opponents to look through his telescope, was saying, "If you do as I have done, you will observe what I report."

There's a folk-song that has a chorus, going:

Hokey pokey diddledee okey,
Maybe you think I lie,
But if you come to Darby Town,
You'll see the same as I.

That is, actually, the essential theme-song of Science. That anyone, no matter who he is, who repeats the specified actions, will observe the predicted results.

Dr. Price is not consciously aware of that; he is not consciously aware that he wants not a demonstration of "It is," but of "This is how you, too, can have clairvoyance."

Dr. Rhine's effort to prove the *existence* of clairvoyance is forever doomed, as a *scientific* project. Dr. Rhine's engaged in trying to generate new science—which is, inherently, nonscientific! He is doing immensely *useful* work, but that work is not scientific.

If Dr. Rhine can develop a technique whereby he can show Dr. Price how he, Dr. Price, can achieve clairvoyance, for example—then Rhine's work will in fact be "scientific." Until then, it is hyper-science—outside of and beyond the borders of science.

"The Natural is what I can do; the supernatural is what can't be done. And, of course, I can do everything that can be done, or could learn to if I wanted to take the trouble. If I can't do it, and can't learn, no matter how badly I want to—it's not real. It's silly supernatural superstition. It's unscientific."

The present how-to-do-it definition of science is a good, useful, and thoroughly valid thing. It's an immensely important rigidity; it's the basis on which Western civilization has built itself, forced itself up be-

Continued on page 159

THE MISSIONARIES

There are—and always will be!—people for whom Trouble means the challenge of a problem to be solved with delight. Occasionally such people want to retire . . . they think!

BY EVERETT B. COLE

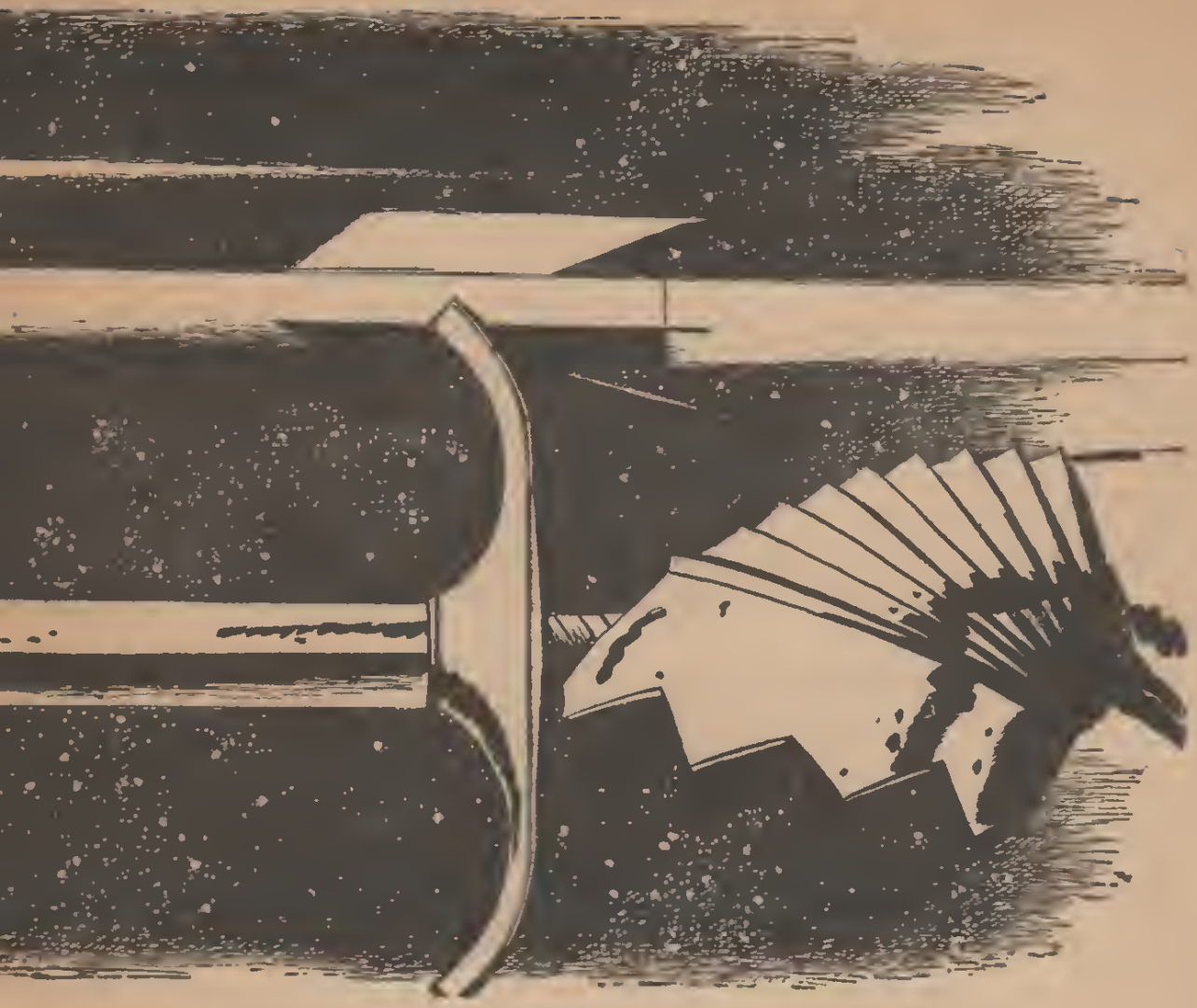
Illustrated by van Dangen

"All right, Primate, straighten up. Try to walk like a guardsman, at least." The voice conveyed impatience and assured authority.

Klion Meinora stiffened for an instant. Then he stopped in midstride and wheeled about.

A few inches before him, a large face twisted into amused laughter.

"Got you that time. And good." A long finger wagged in Meinora's face. "You should take time out and analyze that reaction. Pure fury. It should be good for a long sequence in one of your tapes. But



you want to be careful, Friend of Mine. You could hurt someone that way."

Meinora stared. "Sanathor!" He shot an arm out, placing his hand on the other's shoulder. It required a long reach.

"Didn't suspect you'd be in this sector, Classmate. Thought you'd be on the other side of the galaxy somewhere."

Boreel Sanathor placed one of his huge hands on Meinora's shoulder and squeezed gently.

"They just transferred me," he said. "Seems there are a few difficult cultures scattered around in this sector. They needed a nasty tempered joker to deal with 'em, so they looked around a little. And they caught me. Gave me a pretty good job, too." He dusted his hands together complacently, then looked sharply at Meinora. "You come in to sign up again? We can use you."

Meinora shook his head. "Nope," he denied. "Not this citizen. You can have your good jobs. I like my release. Decided to try teaching for a while, and I like it. I'm my

own group commander." He grinned.

"Finished my courses at Kleira and got on as a field counselor. Some day, I'll apply for senior citizenship, I suppose, but meantime, I've been counseling and running off entertainment sequences whenever the students leave me any spare time." His grin widened. "Field counselors have lots of spare time, believe me."

"Your stuff being well received?" Sanathor glanced at the case in Meinora's hand.

Meinora frowned. "Has been, yes. But I've been in trouble lately. Can't seem to get anything going right." He shrugged. "Got my so-called brain in irons a while back. Finished with a student and went back to work. But I found myself in direct field opposition with full drive. Couldn't get out of the same old sequence, so I decided to get out of space for a while and try working planetside." He laughed. "It was a lousy sequence."

Sanathor spread his hands and grinned. "You never seemed to have that kind of trouble when you were in the Guard. Why not sign up again for a few cycles? You might get some of the academic cobwebs out and get an idea or two in their place. You're in the right building, and you can't do it any sooner."

"No, no." Meinnora laughed. "I told you, I like my release. Just got tired of being a spacer. Called in to the University. Told 'em I was going to be planetbound for two or three cycles, and drifted over to Dorana. Landed on Huilon—you know, the seventh planet—and—"

"Hold it." Sanathor held up a hand. "I wouldn't know a 'Dorana' if it walked up and grabbed me. Is it a star or something?"

"Literal character," growled Meinora. "Sure it's a star. Look it up sometime, when you're tired of goofing off in corridors." He paused. "And you with your tunic off, too. Couldn't get away with that when I was in the Guard. Guess discipline's getting lax these days." He shook his head in mock regret.

"Dorana, for your information, is a nice, fat, A type, with a swell, strength nine field. And it has planets. Several of them. One of 'em's called Huilon." He looked at his friend scornfully.

"Anyway, I landed on this planet, Huilon. They've just recently become allied to the Federation. Haven't really joined us yet—no member accredited to the council, and no formal request for membership, but they welcome galactics as traders or tourists . . . it says." He frowned thoughtfully.

"Went there once, just after I got out of the Guard," he added, "and had a wonderful time. It was a little different this trip." He broke off.

"Hey, look. I've got an appointment. Came in to talk this over with the boss man of the Philosophical detachment. That's what these tapes are for." He looked down at the carrying case in his hand. "Thought I might've stumbled over something in his line. Know where the head culture mechanic hangs out?"

Sanathor looked at him with mock hauteur. "I assume you are referring to the Sector Philosophical Officer?" He tapped himself on the chest.

"I don't 'hang out.' I direct the operations of my personnel from an office."

"I'm not talking about— Oh, now wait a minute. Don't tell me they promoted you that fast."

Meinora's companion reached out and opened a door.

"You've been out in space for a lot of cycles, Friend of my youth." He waved.

"Right in here. We find lost spacers. We straighten out culturally mangled planets. And we cause unemployment in the combat arm." He waited for Meinora to enter, then strode across the room, to sit down behind a desk.

"Seriously, though," he added, "what's the difficulty? Your transmission was pretty vague, you know."

Meinora nodded. "Deliberately so," he said. "I didn't want the wrong people to pick it up and get ideas."

"So?" Sanathor flipped a switch on his desk. "What have you found?"

"Conquest, or at least attempted conquest, by infiltration."

"Involving a Federation world?" Sanathor's eyebrows peaked a little.

"Huilon isn't really a Federation world," Meinora told him. "Not yet, anyway. But they are allied to us."

"Makes very little difference in a case like this." Sanathor shook his head. "Might as well be full members. You said infiltration. Any aggression involved?"

"None. Not in the normal sense of the word."

Sanathor leaned back. "How," he inquired, "do you conquer by infiltration or any other means without some sort of aggression? And especially how do you accomplish this at interstellar distances?"

"You use missionaries." Meinora leaned forward. "And distances don't make much difference, so long as the physical structure of the two peoples involved are similar and conditions are right. It's not too different in procedure from one of your own rehabilitation operations. It's just the results that are different. The same general system can be used either way. You should know that." He got up and strode toward the desk.

"Mind if I use your star catalogue? I can show you the areas involved."

"Go ahead." Sanathor slid his chair aside. "Control panel's right here."

"Thanks." Meinora leaned over the desk, touching buttons. Beside the desk, a large viewsphere clouded, then became black. Tiny points of light appeared in the blackness. At one side, a red circle formed around one of these points.

"Sector Headquarters," explained Meinora. He examined the chart on the console for a moment, then set up a combination on the controls and hit the actuator bar. A thin, red

line sprang out from the encircled point, extended nearly across the sphere, and stopped close to another point. A blue circle formed around this second point.

"That's Dorana." Meinora pointed at the blue circle and turned to face Sanathor for an instant. "Now, I'll set up a dual vector."

Sanathor had been watching the sphere. "Good enough," he said. "Pretty close to Sector Boundary, isn't it?"

Meinora nodded. "So's the other planet we're concerned with. But it's in another division." He punched buttons again and a blue line sprang from Dorana. At the same time, a white line started from Sector Headquarters. The two lines converged and met near the bottom of the sphere. They met in a dark area, and Meinora looked around again.

"Unexplored area," he remarked. "At least, it's written off that way on my catalogue. Of course, I might be a few light-years out of line on this one. And there might have been some exploration since my catalogue was revised."

He punched a button and a slight haze built up around the intersection of the lines.

"My information was a little vague and I couldn't get a definite name for either the sun or the planet. They just came to me as 'The Sun' and 'The Home World.' People involved don't use the same references we do, hence the peculiar orientation. And I got something about a curtain or barrier. But there's no doubt about one thing: There's a young empire right around the vicinity of that intersection. And in their own sneaky way, they're an aggressive bunch."

"Leave the sphere set up," Sanathor told him. "Got any evidence on all this?"

Meinora shook his head. "Unsupported word of a junior galactic citizen," he admitted wryly. "Of course, I've got a good story."

"Glad you're not some casual stranger. Saves a lot of checking. Let's hear it."

Meinora walked away from the desk and sat down.

"Huilon isn't really a primitive world," he began. "Of course, it's not as far advanced as a lot of the Federation worlds. For example, they're unfamiliar with the matter converter. Still depend on chemical synthesis, and stick to it. They have a pure cost economy, too. And telepathy, either natural or induced, is unknown." He rubbed his chin.

"Matter of fact, I doubt if they'll take any interest in telepathy for a long time. Some sort of species-wide trauma, I think." He shrugged.

"I've picked up some data on that, and I may do a synthesis on it some day," he added. "But that's beside the point.

"They've worked out interstellar travel, of course. And their cruisers contacted a Federation patrol quite some time ago. They looked us over and decided they'd like to work out

their own problems for a while longer."

Sanathor raised his eyebrows, then nodded approvingly. "Want to meet us on a more even footing, I gather," he commented. "Smart. Some of the other young cultures should try that."

"True enough," Meinora agreed. "Huilon had a totally independent culture, and it was a good one." He leaned back in his chair.

"I told you I'd been there before. I found them to be a cheerful, friendly people in general. As I said, I had a wonderful time there. They've got a beautiful planet, and they were comfortable people." He shook his head.

"But I went back there a half cycle ago. They've changed. There's an aura of suspicion all over the planet. I made planetfall at one of their main spaceports. They let me down, then guided me to an interviewer. This guy advised me not to advertise myself as a galactic. Said they didn't really have anything against Federation citizens, to be sure, but they were, after all, an independent world. And they had their own culture, which they liked and wanted to retain unspoiled." His face wrinkled in distasteful remembrance.

"Told you they're nontelepathic, didn't I? But you should see how much expression they can put into their voices and physical attitudes."

Sanathor nodded. "I've dealt with nontels," he said. "Barrier type, I gather?"

"In effect," Meinora agreed. "They've almost a closed circuit. Gives the impression of a sort of thick veil." He extended his hands, palms up, fingers extended. "Can't get anything out, but they can pick up suggestive impressions—if the mental field's strong enough."

"They can be influenced, then?"

"Right. And that's just what's happening." Meinora nodded vigorously.

"Anyway," he went on, "I hung around their entry station for a while. Brushed up on the language. Got some credits changed to local currency, and did a little checking on the advisability of a cover identity. Found I could use my own name. It's actually used in one Huilonian district." He glanced sideways.

"I didn't really need to go that far," he admitted, "but frankly, I was curious.

"At first, I went out on the town." He shook his head. "Wasn't so good. All I could get out of the people at the hotel was polite conversation —and that strictly business. Not exactly a cold shoulder, you know, but one of those deals where, 'your money's as good as anyone's, we suppose, but we never met your grandfather. You're an outsider.'

"I roamed around a little and found a few exceptions to the rule. There were people who'd give me a really civil word. But even they were a little wary. Some sort of cult had sprung up. Among themselves, the cultists seemed quite normal, but they were highly suspicious of non-

members, and had very little to do with them. And the nonmembers didn't know who to trust." He laughed shortly.

"So I decided to get away from the city. Bought a ground car and started wandering. After all, I had wanted to get some work in on a new story sequence or so, and I was going to do something about that. I found a beautiful spot, way up in the mountains. Leased a cabin, set up my recorder, and started working." He cocked his head to one side.

"From that angle, I'll have to admit it was a successful trip. I ignored the human factor and wandered around the mountains all by my lonesome. They're truly beautiful."

His eyes veiled in memory and he shook his head. "Of course, there was a taint of that same standoffishness I'd noticed in the city, but as I said, I managed to ignore it. And I got some work done—for a while."

He stopped. "Look, San. I can give you practically a first-hand view from here on. Made up a set of recorded sequences on the way in." He pointed to the case at his feet. "Mind if I run these instead of making a lecture out of it?"

"Sure." Sanathor nodded. "Get your stuff set up. Meanwhile, I'll get in touch with Exploration and get a little rundown on this empty space in the sphere." He pointed to the blank area surrounding a faint haze in the viewsphere.

Sanathor cupped his chin in his hands and sat quietly for a while, watching Meinora open his case and remove a portable playback. Then, he ran his hand over his head and reached out to his desk. He flipped a switch, punched a series of buttons, and waited.

A face superimposed itself on the images of the stars of Sector Fourteen.

"Exploration. Kellar."

"Sanathor, Philosophical. Got an intersection near Sector edge. Want the co-ordinates?"

The face in the sphere moved from side to side, then stopped.

"Not necessary. I can duplicate 'em. What's on?"

"Report on activity in the intersection area. Any of your people ever been out that way?"

Kellar hesitated. "Hang on. I'll have a look." His face withdrew from the sphere.

Sanathor leaned back in his chair, watching the sphere idly. It blurred a little, then came into sharp focus again. Faint lines shot out from Sector Headquarters and various marker stars brightened. Then a second star map was superimposed. Sanathor turned away.

Seemed funny, he thought, that there had been no report of an active civilization in that big, blank space. There must be something peculiar there. He looked speculatively at Meinora for an instant, then shook his head.

No, that couldn't be it. Meinora had always been known for his im-

patience with conventional patterns, of course, but he'd also been known for accuracy. In fact, Sanathor could remember several instances when Meinora's quick determinations had been questioned, to the discomfiture of the questioner. Meinora had built up a considerable reputation as a result of excellent results in a few pretty touchy operations.

Again, Sanathor looked across the desk. Meinora had his playback set up and was placing a reel of tape.

The communicator beeped softly and Sanathor looked back at the sphere. The Exploration officer's face was again superimposed on the star images.

"Are you giving me a hard time?"

"Why?"

"That's a funny orientation you've got there and I didn't recognize it at first, but you've got a dark nebula—a fairly big one. And your vector intersection's right in the middle of it. We've been around that area and we've placed danger markers. But so far's we know, no one's ever been crazy enough to try going through it. It's loaded with strong, interacting fields from a cluster of darks."

"But could it be penetrated? And is there a possibility of something inside the nebula?" Sanathor frowned and cast a glance toward Meinora. "I've got a report that there's something in there."

One of Kellar's hands appeared briefly. "Oh, sure. There are all kinds of possibilities, I suppose. Anything can happen in space, and we haven't done too much exploration out that way yet. Just charted the thing. We do know that there are gravity fields coming from those dark stars. And those fields are so strong they bend light into closed paths. That's why some of those darks are dark." He shrugged.

"Surely, there might be neutralization paths. But if there are, they'd be crooked. And you'd run into areas where limiting velocity'd be down in the kilometer per hour bracket, I imagine. But I wouldn't say it was impossible to get through, or that there couldn't be something inside. Why?"

Sanathor shrugged. "As I said, I've got a report from a reliable source that something came out of there. Something that's in my line of business. Might have to send some of my people in there one of these days."

Kellar smiled crookedly. "Be more than one day, I can assure you." His smile faded. "Look, I've got a couple of cruisers out that way. I'll have them take a look and do a little probing. See if we can find any null paths. Part of our job, you know. And it'll give my people some practical exercise."

"Thanks a lot. See you at the club." Sanathor disconnected and looked across the office.

Meinora was waiting. As Sanathor faced him, he walked across the floor, headband in hand.

"Easier than hooking into the viewsphere," he explained. "And I think it's a little more effective, too."

He looked back at the machine. "That thing's got a couple of ideas of my own in it. The gadget uses full-scale recording, and gives full sensation. Almost amounts to a personality exchange."

Sanathor looked at the headband doubtfully. "Just one band? I know you're a full telepath, of course, but—"

"Don't think I'll need to cut in." Meinora shook his head. "I can hook in another band, though, if you want me wired into sequence."

"No, do it your way. It's your sequence." Sanathor fitted the headband on. He watched as the other flipped the machine on and made final adjustments.

Suddenly, he wasn't Boreel Sanathor. He was Klion Meinora. And he was puzzling over a story sequence that wouldn't come out just right.

The door chime rang musically and he looked up from his recorder. He glanced in the direction of the door, then stretched and got up, to start across the room. Halfway to the door, he paused, turned to look at the recorder, and walked back to throw a dust cover over it. The chime sounded again. He shrugged and crossed the room.

Two men stood on the steps, within the shaft of light which shone from the door. Meinora looked at them questioningly.

"Good evening."

One of the men held out his hand.

"How are you, Mr. Meinora? I'm Counselor Dudarik." He inclined his head sideways. "This is Friend Leuris. We are from the Brotherhood." He held out his hands in a gesture of peaceful supplication.

"Come," his attitude seemed to say. *"Join us!"*

"We thought we should pay you a visit, to welcome you to the village."

Meinora blinked. "The Brotherhood?"

"Why, yes. The Brotherhood of Light, you know." Dudarik glanced past Meinora, into the room. "We would like to talk with you for a time, if we may."

"Admit us. We are the ones you may trust and follow!"

An aura of friendly interest enveloped Meinora. For a moment, the man in front of him assumed a fatherly aspect. He appeared as an old, trusted adviser and companion. And Meinora felt a powerful compulsion, telling him to believe what the man said, and to follow his instructions. Involuntarily, he stepped back.

"Come in," he invited.

As the two men stepped inside, the impression of good will and fatherly interest intensified.

Dudarik looked around the room approvingly. "You have a nice place here," he complimented.

Meinora smiled. "Thank you. I've

got it fixed up just about the way I like it."

He had recovered from the numbing effect of the waves of mental force. Now, his senses alerted, he looked at Dudarik appraisingly, then waved to indicate chairs.

"Sit down," he invited.

Dudarik chose a chair and cast a quick glance at Leuris, who promptly sat in the nearest chair, watching expectantly.

"Well trained," Meinora told himself. For the moment he dismissed Leuris from consideration.

Dudarik was still examining the room.

"You show excellent taste," he said. "I see you prefer the older styles to some of this so-called modern furniture. Are you planning to settle here permanently?"

"Well," Meinora hesitated, "I expect to be here for some time." He spread his hands deprecatingly. "You see, my work doesn't require me to stay in any given spot."

"Oh?" Dudarik looked at him interestedly. "You are most fortunate. Most of us have a fixed place of business. What line are you in?"

"I'm a retired teacher," Meinora told him. "Right now, I'm doing a little free-lance writing."

He felt a surge of almost avid interest, which was quickly suppressed. The wave of good will returned. Carefully, he sent out a probing thought. There was no defensive reaction. Cautiously, Meinora increased the power of his probe, investigating the man's thoughts.

Dudarik continued to make small talk, alternately complimenting and inquiring. Bit by bit, he was allowed to pick out information about the

past life of a teacher of basic philosophy and history, who had finally saved enough to allow him a moderate income.

In turn, he volunteered information about the beliefs and practices of the Brotherhood of Light, a theological order which professed to an unshakable belief in the high destiny of Huilon and its people. Huilon, they preached, was the chosen planet of the universe—the destined ruler of all.

But Dudarik was revealing more than he realized. Beneath the surface, Meinora was picking up other information. Mardon Dudarik, he discovered almost immediately, was not native to Huilon. His home planet lay in a far-off solar system, where he was a younger son of one of the older families of the nobility.

In accordance with the custom of his homeland, he had left his father's estate, to build an estate for himself. And since the estates on the home planet were left only to the eldest of the line and could never be broken up, he had journeyed far.

In company with other younger members of noble families, he had come to Huilon, where he had joined with his companions in a pattern of conquest long used by his people on other planets. When the young nobles had finished their work on Huilon, they would be able to claim the choicest bits of the planet as their own. They would then ally themselves to the homeland and would found noble lines in their own right.

Meinora probed further, in an effort to discover the location of the man's home planet. Bits of data were forthcoming. Although reference points were different from those to which he was accustomed, he was able to build a rough star map from the stray thoughts his probing brought to the surface. But he was unable to decipher the vague thoughts about the "curtain," or "barrier."

He turned his attention to Leuris. This one proved to be typically Huilonian. He was receptive of strong impressions, but did not recognize them as coming from outside his own mind. And his thought processes were veiled. Meinora made no effort to force his way beyond the veil.

Dudarik was absorbedly working out a justification of the tenets of the Brotherhood, making frequent reference to basic Huilonian theology. The articles of the Brotherhood were well worked out, Meinora noted. Even without the compulsive mental force maintained by Dudarik, the theory was of a nature as to appeal logically and emotionally to a Huilonian who accepted certain premises. And those premises were drawn from basic Huilonian theological belief.

Dudarik finished rounding out a discussion of one point, then looked at his watch.

"You know, Mr. Meinora," he apologized, "we had no intention

of keeping you for so long." He smiled gently. "When one becomes interested in a discussion with an intelligent person, you know, time seems to simply melt away. But you must be getting tired."

He got up and Leuris quickly followed his lead. Dudarik started for the door, then paused. He reached into a pocket and produced a thick pamphlet.

"We would like to leave this with you," he explained. "It outlines some of the beliefs and aims of the Brotherhood. Possibly you might like to read it over." The mental force became faintly commanding as he extended the pamphlet.

"We would like to come and talk with you again, if we may. Perhaps in ten days or so?"

Meinora accepted the pamphlet. "Yes," he agreed enthusiastically, "I find your discourse quite interesting." He waved a hand to indicate the living room. "I spend most of my time here in the evenings, so you'll find me in almost any time."

He followed his visitors to the door.

He looked up. Someone, across the desk, was rewinding tape in a parapsych playback. He blinked. It looked— In fact, it was Meinora. But who was he, then? He had—

Sanathor regained full conscious control. He straightened up, then laughed.

"First time I ever had anything like that happen to me," he said. "That gadget of yours packs quite a punch."

Meinora turned around, grinning. "Wouldn't happen ordinarily. There'd be a fade-out to let an observer come back gradually. I snapped the switch on you. Thought I owed you one for that gag in the hall." His expression became serious.

"That sequence was no gag, though. It was straight reportage. What do you think?"

Sanathor frowned. "Looks bad," he said quietly. "Plenty bad. I'll have to put a team on it in a hurry." He paused. "Did you hang around for that second visit those jokers promised you?"

Meinora nodded. "Oh, yes. I didn't want to rouse any suspicion. Agreed with 'em and answered their questions as to my knowledge of the pamphlet. I told 'em I was very much interested and fed this Dudarik back some of his friendly interest--with interest. Then, I gave them a story about some difficulty with my income. They were properly sympathetic, so I told 'em I was going to have to go to my home area for a while, but I'd be back soon's I got things straightened up again." He smiled.

"And that's just what I intend. I swallowed their lesson for the night in one gulp, ushered them out the door, and started packing." He snapped the lid on the playback.

"And here I am. I'm back in my home area. And when I get things straightened out, I'll go back. Just as I promised them."

Sanathor stroked his chin then looked down at his desk. Finally, he looked up and shook his head.

"I don't think we can let you do that," he said.

Meinora looked at him incredulously. "Now, wait a minute," he said indignantly. "You can't do this to me. I'm in this up to here. And I mean to see it through."

Sanathor shook his head. "Sorry. No can do. Regulations, remember?"

"Oh, now look. I—"

"No, I mean it." Sanathor pointed a long finger. "You're a private citizen of one of the systems in the Federation, you know. Of course I realize you've been a guardsman, but that has nothing to do with the case. Your present status is purely unofficial." He shook his head.

"You've made an excellent report on a very nasty situation, and we're grateful. But you know the Guard's attitude on junior, system attached citizens who involve themselves in official business." He spread his hands.

"It just isn't done. You'll have to stay away from Huilon till we get this misbegotten mess cleaned up."

Meinora frowned. "But there must be some way. I know that some citizens have—"

"Only in very special cases. And this isn't one of those. For one thing, those were particularly difficult cases, calling for highly specialized and developed ability and experience. There was some pretty high-power operation involved and some of the necessary actions were drastic, to put it mildly. And the citizens involved were specifically asked for help by the Guard. For another thing, those were senior galactic citizens. You haven't achieved that status, yet."

Meinora grimaced in annoyance. "I know that," he snapped. "And I also know I won't be eligible for senior citizenship for a lot of periods to come. But I do have certain specialized ability, you know. And I'm not precisely a planet-bound citizen, either, despite my status. I'll just bet it could be approved if you weren't too lazy to check a few regulations."

Sanathor hunched one shoulder up, inclining his head.

"In a way, you're right. There is one way you can get into this operation. And you can see it through to a conclusion, too."

Meinora relaxed. "Well, why all the fuss, then? Let's get at it."

"Hold up your right hand."

"What?"

"Just what I said. Hold up your hand. As a Sector Department Head, I can swear you back into the Guard. And, due to your prior service and rank, I can offer you an augmented team and assign you to this operation. Of course, it'll be a temporary appointment, but I'm pretty sure you'll be confirmed as a permanent, senior team chief when this is all over."

"But I've no intention of going back into the Guard. And how

about my appointment with the University? That's no answer."

"Forget it." Sanathor waved a hand. "You've already ducked away from the University. You told me that yourself. And I know better than to think you'll go back. Look over the evidence, and you'll have to concede that point." He drummed on the desk lightly.

"You were getting dissatisfied with kicking around aimlessly, just waiting for some student to contact you. So, you automatically headed for a trouble spot. Not only that, but you instinctively acted like the trained investigator you are, soon's you got the first tiny sniff of something wrong." He laid both hands on the desk and stared at his friend intensely.

"You're one of us, Klion, whether you like it or not. And you always will be. You've been a little uneasy ever since you left the Guard. You've proved that to me. Now, why don't you admit it to yourself?

"Come on. Get that hand up."

He got out of his chair and went to a small closet, from which he took his tunic with its brilliant insignia of rank.

Meinora sighed.

"Yeah, sure. Oh, well, I suppose you're right. I just hated to admit it. Go ahead and call your clerk in."

He looked down at his right hand, then slowly put it in the air.

Mardon Dudarik leaned back in the cushions of the ground car, looking around the landscape with approval. They rolled past a wooded valley and he nodded to himself complacently. That, he thought, would make a nice site for his hunting lodge.

As the road grew steeper, he glanced aside at the car's driver. Leuris, he told himself, was a useful man. He could be well employed later as an overseer. Dudarik glanced down at his own plain apparel, then spoke.

"What do you think of this man, Meinora?"

Leuris took his eyes off the road for an instant. "Very well read man," he commented. "I should think he would make an excellent brother for the Order." There was a slight hint of longing in his voice.

"No," Dudarik disagreed, "I think he will be better as a Friend of the Brotherhood. Like you, I believe he will take well to training in spreading the Brotherhood's word." He looked at the trees beside the road.

"I believe, Friend Leuris," he added, "that we may entrust you with more important work than that you've been doing. You may join with Friend Kedrin, I think, and the two of you should be able to work well together in the field."

Leuris looked surprised. "You mean, Counselor, that we may work independently?"

Dudarik nodded judicially. "I believe so," he said. "You seem to have absorbed instruction in a most exemplary manner. In fact, your knowledge of the principles of the

Brotherhood might be termed as superior." He examined his assistant critically. "We will examine further into the matter and give you full instruction at your home tomorrow. You may invite Friend Kedrin to join us there, just after midday."

He resumed his inspection of the countryside.

It would be nice, he thought, when the difficult phase of the work here on Huilon was complete. Then, he would be able to relax from the rather difficult role he was playing. He would be able to assume his proper station and start organizing his manorial establishment. He smiled.

As a member of a branch of the Quinbar family itself and, other than the prince, the only possessor of the Imperial blood in this expedition, he would be entitled to second choice of estates when the land was apportioned. And the prince had already indicated his choice. Dudarik shook his head as he thought of that choice. Certainly, if he had his preference, that industrial area would be the last place he would look at.

But, he realized, the prince had his father's injunction to follow. He would, of coures, be emperor when the planet was at last secured. And the emperor had certain obligations and duties. Dudarik shrugged. He was not so restricted.

It would be some years yet, of course, but the ships from Jorik would be sent for eventually. And they would come, loaded with the young nobles who would be assigned estates subsidiary to those of the more enterprising pioneers who had colonized the planet.

The "Brothers" from the retreats would then resume their normal status and they could commence rebuilding the planet along proper, Jorikan lines. Many of the devices and inventions in common use here were unknown on Jorik and could be well used on the home planet. Trade would be excellent. Again, he glanced aside at Leuris, smiling inwardly.

The man seemed to want the status of Brother in the Order.

Dudarik wondered what his reaction would be when he found out the true nature of that status. And he would learn. The Jorikan's amusement grew. Some day, Leuris, along with many others, would be invested with full knowledge of the "Brotherhood of Light," and would actually attain his wish. By that time, he might not be so eager, but he would become a "Brother."

But long before that time the reorganization of Huilon would be complete. It would be a properly run colony of Jorik, with technical knowledge and manufacturing limited to the royal family. And another generation would be ready to move on to another planet, to establish their own colony. Possibly Leuris would be assigned to accompany some other counselor as assistant—that is, if he could be trained in the necessary mental techniques.

Dudarik's brows drew together in a slight frown. It was peculiar,

he thought, that the natives of this planet had managed to build such a high degree of civilization with no noble class to guide them. He had met no one who could exert any strong mental influence, not even on a fellow native.

And yet, the planet was highly developed. They had even perfected a version of the Lift of Alerom, so they had ships of the void. Ships, he was forced to admit, which were superior to those of the Emperor of Jorik, though such an admission bordered on sacrilege. Worse, they had other advanced devices and tools, the like of which no Jorikan had ever seen.

He shrugged contemptuously. Despite their knowledge and equipment, they were a planet of serfs. Why, he thought, even some few of his own serfs had greater powers of mental persuasion than these. And their vast technology appeared to be used only for comfort and easy living. Apparently, they had no thought of going out to govern. He looked about him at the luxurious appointments of the ground car. Yes, they were a soft people, who lived soft lives.

But that simply made things easier for him, he realized. It had meant that he and his companions—and even some of the more trusted commoners in his crew—had found it simple to sow the seeds of indecision and mistrust. The offer of guidance had been accepted without interference. And soft people, used to soft lives, could be easily dominated. Then, they would become used to less soft lives.

He smiled as he thought of the ease with which the mental broadcast had been spread over the planet. There had been no opposition or resistance. Each of them had only to stay in a settlement for a short time and broadcast his message.

"Trust no one, unless he be a Counselor or Friend of the Light. Them, you must follow in complete trust and obedience."

And, after assuring himself that all had heard and accepted, he could move on. And the feeling had lasted —even grown. Soon, it was accepted principle throughout Huilon that even close friends must be cautiously watched and strangers must be shunned. Unless, that is, they came as emissaries or Friends of the Light.

Dudarik shrugged and looked at Leuris again.

When the time came, possibly men like him could be used in colonization, just as were the lower serfs of Jorik. They could become servitors—Brothers of the Torch.

The car rounded a sharp bend in the road and glided to a stop before the gates of a large stone and wood building. A Brother of the Torch approached to open the car door, and Dudarik turned toward the owner of the car.

"We are grateful to you, Friend Leuris," he said. "If it were not for you and for other Friends of the Brotherhood, who give so freely of

their time and substance, the lot of those of us who are humble laborers in the field would be hard indeed."

He stepped from the car and walked toward the building entrance, the Brother of the Torch following him at a respectful distance. It would be nice, he thought, to get to his comfortable apartment. There, he could change to more suitable garments. He could lay aside the mask for a time, and relax in comfort.

As he stepped inside the door, the servant approached him and he turned toward the man. He examined him uncertainly.

"I don't recognize you, Fellow," he said. "Whose retinue—"

The man smiled coldly at him and leveled a small instrument. For an instant, Dudarik knew agony in every nerve. Then his world became a dark fantasy.

He awoke in a small, bare room. For a few seconds, he lay, looking at the featureless ceiling. Then, he sprang out of the low cot and strode about, examining his surroundings. There was nothing here. Nothing, that is, except the cot, with its mattress and sheet, the blank walls, and the ceiling.

There were no sanitary facilities. There was nothing to sit on, other than the cot. There were not even lighting fixtures. The walls seemed to glow with a soft, restful radiance which furnished a shadowless light over the entire room. And there was no door.

Dudarik strode from one side of the room to the other, then stopped in the center.

What had happened? He could remember the smile on that strange servant's face. And he could remember the instant of unbearable pain. Beyond that, there was nothing. Nothing, that is, excepting a vague memory of discomfort and fear. The fear returned, to approach terror.

Where was he? What was going to happen? What *had* happened?

One of the walls slid away and a man in close-fitting, black clothing faced him. He beckoned.

"Come along," he ordered.

With an effort, Dudarik threw off the feeling of terror. He remained where he was.

"Who are you?" he demanded angrily. "Where am I? What—"

The man interrupted curtly. "You will find out pretty soon. Come on. The chief wants to see you."

"I refuse to move," Dudarik snapped, "until all this is explained. No one treats a noble of Jorik in this manner."

The man shook his head wearily. "You'll come," he prophesied. "Now, do you want to walk, or will I have to furnish you transportation?" From his belt, he produced a small instrument.

Dudarik shuddered. The formless terrors of the dark fantasy started to return and he eyed the instrument fearfully as he moved reluctantly forward.

"I'll walk," he conceded.

His guide stepped aside. "Straight

ahead," he ordered. "I'll tell you when to turn."

They proceeded along a corridor, turned, and stepped into a shaft. Somehow, Dudarik found himself lifted to another corridor. At his guide's command, he stepped out of the shaft and walked along the hallway. Finally, he was ushered into an office.

As the wall slid into place behind him, he stopped, to stare at the man who sat behind the table which was in the center of the otherwise bare room.

"Meinora! But—"

"That's right," he was told. "Acting Team Chief Klion Meinora, Philosophical Corps, Stellar Guard. I told you I was a teacher of basic philosophy. And I am. You merely made an incorrect assumption as to whom I taught and what methods I used." Meinora smiled. "You see, we never really lie to primitives. It's against regulations."

Dudarik felt a surge of fury. "Primitives!" he snapped. "I'll have you know I'm—"

Meinora waved a hand negligently. "Never mind," he said. "I didn't have you picked up and brought aboard for the pleasure of arguing with you. You were brought in because we want information and you have it." He pressed on the table and a large, clear globe rose from the floor.

"First, we want the name of your home planet. We want its precise location. And we want navigational data, so we can reach it easily." The globe darkened and became a star map.

"Do you actually think I'd give such information to you?" Dudarik sneered.

Meinora looked at him indifferently. "Certainly. I know you will." He picked up a thin headband from the table and fitted it on.

"Mental amplifier," he explained. "Not really necessary, perhaps, but it'll make things more convenient—for me." He slouched a little in his chair, still staring at the prisoner.

Dudarik found himself forced to move toward the viewsphere. For a few seconds, he struggled against the insupportable pressure on his mind. Then, his defenses shattered and collapsed. He felt sick and dazed, but the information he had been asked for was still clear in his mind.

He examined the viewsphere. It was unfamiliar, but somehow he found it easy to understand. He gave directions slowly at first, then more surely. As he talked, reference points appeared within the sphere. Lines shot from point to point, shifting as he indicated safe travel lanes.

Gradually, he came to appreciate the operation of this globe and the extent of the knowledge of those who had made it. A feeling of pride filled him that he could furnish information these beings lacked.

The star map faded, to be replaced by a global view of Huilon. Carefully, Dudarik pointed out the locations of the various retreats of

the Jorikan "Brotherhood." One by one, he described the young noblemen who had come to Huilon as "Counselors" at those retreats. There were a large number of them and he grew tired.

At last, the ordeal was over, and he turned away from the globe. Dully, he allowed himself to be escorted back to his cell. Something, he felt, was horribly wrong. There was something he had done—something discreditable. But he couldn't seem to remember just what it was.

His guard explained to him the workings of various devices in the cell. There were, Dudarik found, various points on the walls which could be pressed to produce conveniences and necessities.

"You won't have to stay here too long, anyway," he was told. "We'll make planetfall at Sector Headquarters pretty soon. They'll pick you up for treatment there. Then, we'll take off again." The guard smiled.

"Your troubles are over," he added. "Ours are just beginning. We've got a full sized job to do."

"Complicated, isn't it?"

Master pilot Lor Barskor looked around for an instant, then turned his attention back to the controls. He glanced into the viewsphere, then looked down at his meters. Suddenly, he drew a hissing breath between his teeth and made a quick readjustment of the drive knobs.

"It's complicated," he agreed.

"Chief, if I'd even thought of something like this when I was a youngster, I'd have paid more attention to my father. He wanted me to learn to play an oboe."

A meter needle flickered and Barskor snapped a couple of switches, then readjusted knobs. The ship shuddered and Meinora grabbed one of the safety rails to catch his balance.

"I must be dreaming," growled the pilot. "This just isn't happening. Not to me!"

Delman walked into the control room, cautiously keeping within reach of the rails.

"Hey, Barskor," he said. "Want a relief?"

"Hang on." Barskor made another drive correction and both Meinora and Delman grabbed for support. The ship remained steady and they looked at each other foolishly.

"Hah!" Barskor snorted. "First time I've made a decent field correction this watch." He jerked his head to glance at Delman.

"Take the other console, and ride through with me on the controls," he ordered. "I don't dare get up till you're cut in. Turn this thing loose now and anything could happen."

"What's our velocity?"

"Which velocity? And relative to what?"

Delman sat down and waved his hands uncertainly. "You mean it's that bad?" He looked at the meters, then shook his head. "See what you mean. I was thinking of absolute velocity, relative to galactic null."

"Lot of difference that would make right now," Barskor glanced at the bank of meters before him, "even if we could determine it." He looked anxiously at the viewsphere.

There were little flecks of light but most of the sphere was a hazy darkness, shot through with tantalizingly vague suggestions of light. A jagged line of red ran through the haze, terminating at the far side of the sphere. Roughly paralleling this was a blue line which led to a small oval near sphere center. Barskor glanced back at the meters.

"Right at the moment, we're almost on course line. I'm holding as near six tenths of terminal velocity as I can. But right now, that's a wild variable." He smiled sourly.

"Oh, we're doing good. Almost landed us in a closed field a while back, and I'm working my way through the neutral path between a couple more right now." He glanced at Delman again, noting that the man had his hands on the controls.

"Comparatively neutral, that is." He made a fine adjustment.

"Get a good grip on those knobs," he advised. "You're going to be twisting them off their shafts. Fields drift in every direction you can name, and a few no one ever thought of before." He arched his back and rubbed a shoulder.

"During this watch, I've done everything from a couple of parsecs

to a couple thousand kilometers per." He leaned over, to tap the large meter in the center of the array before Delman.

"And keep your eye on this one. It jumps all over the scale. And when it jumps, the ship tries a Dutch roll. If you're not careful, she'll jibe on you. Besides being hard on nerves and ankles and things, that could cause us a slight delay of a few thousand cycles while one of the big brains tries to work out a method of getting a ship out of irons in a closed field." He got out of his chair.

"And we'd be pretty hungry by the time they got us loose."

Meinora pulled himself wearily from his cabin and started along the corridor toward the control room. Underfoot, the deck moved unpredictably, then steadied for a moment. Suddenly, for a breathless instant, he was weightless. Then his feet seemed about to drive themselves through the deck. He shook his head, swallowing convulsively.

He remembered an occasion when he had been on a primitive planet. There had been a sea-borne ship and he had felt like this after a few days at sea. He remembered that many of his fellow passengers had been violently ill—just as were some of his team members now.

A giant hand seemed to twist at his stomach and his mouth opened, seemingly of its own volition. Sternly, he forced himself into control, then raised a hand and brushed away the cold drops of moisture from his face. Forcing himself to ignore the pangs, he pulled himself toward the door.

Barskor was turning away from the console. He looked at Meinora through bloodshot eyes, then motioned.

"Chief, did that bunch of jokers they brought in from Huilon actually come through this?"

"They did."

"And they used that antique rattletrap we found?"

"That was their ship."

Barskor shook his head and tapped a forefinger against his other hand.

"There are two possible ways to describe people like that. Either they're super spacemen, who use pliosteel cables for nerves and force computers for brains, or they're a pudding headed bunch of idiots that don't know a gravity field from a light breeze on a mill pond. And they came through on dumb luck." He paused.

"Or they might be an impossible combination of both."

Delman turned for an instant.

"You call it," he said. "They planned to use mental compulsion to conquer the galaxy." He returned to the controls.

"Don't underrate them too much," Meinora cautioned. "They're primitive in some respects, and they didn't bother to check the odds or make much of a reconnaissance before they committed themselves to attack. But the fact remains that they did man-

age to punch their way through this cluster of dark stars. And they managed to chart their course, too, so they had a chance of getting back." He tilted his head.

"And another thing. They might have managed to take over Huilon, a planet far superior to their own in technological and social development, too. Don't forget that, either."

Barskor grinned tiredly. "Brash is the word for Jorik?"

"You might put it that way." Meinora laughed. "And persistent, too. They must have lost a lot of ships in here before that one got through." He looked at the viewsphere.

"You know," he added, "they only had two men aboard that thing with any real knowledge of space flight?"

Barskor looked at him curiously. "Did I hear you right?"

"You did." Meinora crossed the room and stood, looking at the main computer. "All knowledge of flight, gravitics, and even mechanics is a closely guarded secret in their society. Only members of the ruling family on Jorik are allowed to know a thing about science or technology." He pointed at the computer panel.

"Of course, they had servants to operate some of their stuff, like this, for example. But all those servants did was to pull switches and turn knobs as they were ordered by the two men who knew what was going on." He smiled. "And one of those two didn't know what was driving the ship. He just knew something about running it."

As Barskor started to answer, Delman wheeled around. "Hey," he cried. "Look. I've got clear space."

Meinora and Barskor looked into the viewsphere. The dark haze had given way to the normal, velvety blackness of space, relieved by three clear points of light.

"Good." Meinora nodded. "Those are the three stars of Jorik. Project your guide line in the sphere and crank up your drive. We want the one to the left and it should be just a short run to system field." He looked over at the course recorder.

"Well, at least we seem to have passed the curtain."

Barskor exhaled loudly. "It's about time, too," he said. "I was beginning to think I was going to come up for retirement while we were still in there." Suddenly, he turned.

"We've got to get out of here, too," he complained. "Back through that mess again."

Meinora nodded. "And maybe in again. This might turn out to be a long job and we might have to have more teams. And we can't just sit still in here and yell for help, you know. Communications wouldn't get through so well. This time, we'll have to go out and get our own reinforcements." He glanced around the room.

"Be a lot better," he added, "if we can handle this whole operation at one time. Then all we'll have to do

is bring in inspection crews once in a while."

Meinora relaxed and placed one hip on the table as the team members slowly filed from the lounge. He thought over his briefing talk, wondering just how it had actually sounded and how it had been received. Finally, he shook his head and chuckled softly.

"Probably sounded like a full-grown jerk," he told himself.

As the last man disappeared through the door, Meinora eased himself off the table and walked out of the lounge, to pause in the hall.

"Have to supervise the debarkation," he thought. "But that'll come later." He went through the corridors to the control room.

Barskor turned as he entered.

"They all briefed, sir?"

Meinora nodded. "I hope so." He smiled. "Suppose I talked too much, but I didn't want any slip-ups."

"Didn't seem to me there was too much, sir." Barskor shook his head. "Listened in on parts of it and it sounded good. Just as well to remind them of some of those routine items. Even the most experienced agents will forget something now and then. Are you going to stay aboard and co-ordinate?"

"I don't think so." Meinora shook his head. "Not during the initial phase, at least. Of course, when the team goes out for detailed investigation, I'll have to stay aboard, I suppose. Might have to take some action. But right now, I want a first-hand look. I still think like a sector patrolman, you know. And I might as well do some useful work while I'm looking." He turned toward the viewsphere.

"You and Delman can co-ordinate the initial phase, just as I outline in the briefing," he added. "Then you can handle the detailed examination on the Quinbar area when I come aboard again. I'll take Krenall with me for now, and give Quinbar's Imperial Duchy a quick check. Then we'll come in and give you and Delman our information. You can carry it from there." He paused, glancing around the room.

"By the way, where is Krenall?"

Barskor turned back to the console. "Should be across the corridor right now. He's been helping Delman run in the scan maps on the instruction tapes." He flipped a switch on the console.

"How you coming?"

Delman's face appeared, faintly superimposed on the terrain image in the viewsphere.

"Just about done. Where's the chief?"

"In here. He's asking for Krenall."

"I'll send him right in."

The faint image faded and Barskor turned around again. "Glad they assigned Krenall to us, sir," he remarked. "Be excellent training for him, and I think he's going to make a good agent."

A wall section slid aside and

Krenall came across the room. "You wanted me, sir?"

Meinora nodded. "You and I are going to take a little look at the capitol," he said.

"Yes, sir. I was wondering what assignment I was due for." Krenall grinned. "Couldn't find myself on the tapes, so I thought I might catch the mapping detail."

"Not necessary." Meinora shook his head. "Barskor and Delman can take care of that easily enough. They can circle this planet from pole to pole, photographing as they run. It'll only take them a few days to build up a full mock-up. And it'll take us a lot longer than that to complete our initial phase. They'll have lots of time to fill in our details. Besides, you're the only trainee agent they gave us. And we'd better train you."

"Initial phase, sir?" Krenall looked disappointed. "We are going to make a complete observation, aren't we?"

"We are. But we'll take a quick look first, with full refraction on our personal shields. Then, we'll do detailed observation, actually mingling with the natives and picking up their ways of thought. If possible, we'll evaluate and initiate correction before we report back to Base. But in any event, we definitely don't want to be seen by any Jorikan until we know all about them. By the time we show ourselves, we've got to blend in just like native Jorikans. That'll take time and work."

Krenall thought for a minute. "Sorry, chief," he apologized. "I should have thought of that." He touched a fingertip to his teeth. "You know, there's one thing about this whole case that bothers me."

"Oh?"

"We take all kinds of precautions, sir." He pulled the finger away from his face and looked at it carefully. "I know they're necessary, of course. They taught me that, and I've studied some of the difficulties that have occurred when precautions were neglected. For example, the ship's on full camouflage refraction—undetectable, even to us. We have to be guided in. And we don't show ourselves till we know more about the native customs, manners, terrain, social life, and so on than the natives themselves. That's routine, isn't it?"

"Yes." Meinora looked at him expectantly. "It is. So?"

"But those jokers they pulled out of Huilon didn't take any of those precautions. They just brought their ship in. Oh, they did land in a deserted spot, of course, and they dug it in. But then they just started roaming around the planet. Learned the language and customs as they went. They violated practically every rule in our book. And they almost got away with it."

Meinora smiled. "That they did," he admitted. "But they didn't have exactly the same objectives we do. Remember, they were going in to conquer, not to guide and slightly influence, or suggest. And they weren't at all worried about later social and philosophical stresses. In fact,

they wanted stress. As a result, they didn't even consider several of the problems we take quite seriously." He leaned against a safety rail.

"You see, Huilon is a civilized planet. And it's in a Federation sector. It's been hundreds of cycles since they even thought of a hostile visit. Of course, they have detection devices, but they use them only for aids to navigation. I suppose the Jorikan ship was picked up on some of their screens. And I suspect it was seen when it came in and crossed the countryside. But it was just another ship to the Huilonians. It crossed the sky, disappeared behind the horizon, and that was the end of it. It didn't contact any spaceport for landing instruction and it didn't ask for navigational or any other assistance. So, it just wasn't noticed." He held out a hand.

"And another thing. Huilon was and is accustomed to occasional visitors. Everyone wasn't expected to fit into a mold, nor will they be in the future. So, a stranger who simply wandered around and looked things over without interfering noticeably with the peace of the community wasn't any great novelty." He shook his head.

"They just had it good, that's all."

He glanced up at the ship's clock.

"Better alert the team, Barskor. And get your course spiral set up. We'll drop the number one pair as soon as you're at their area corner."

He motioned with his head and went out, followed by Krenall.

One by one, the agents left the ship. And as they cleared, the cruiser resumed its course, to approach another area intersection. At last, Krenall stood on the small platform just outside the personnel exit, his hands on his belt. Meinora inspected him quickly, then nodded approvingly. The trainee's equipment was complete and well secured. He was ready for the drop. The ship swooped toward the surface, then decelerated and hovered.

"Ready for drop?" Barskor's thought was distinct and crisp, as though he were conducting a drill back at Base.

"Ready, one." Meinora sensed Krenall's thought.

"Ready, two," he flashed.

"One off." Krenall disappeared suddenly and Barskor paused. Meinora could vaguely sense his subdued countdown and he stepped quickly to the edge of the platform, waiting and looking downward through the thin mist.

"And two and one and—"

"One clear." Krenall's thought broke in. Barskor's count had been correct, almost to the millisecond."

"Two off."

Meinora flicked his shield into activity and pushed away from the platform. He felt the slight tension as his shield interacted with the more powerful shielding modulation of the ship. Then he was floating free.

He glanced around, to see that he was apparently alone in the sky,

drifting down slowly toward distant streets.

"Two clear."

"Good luck, chief," was the answering thought. "Ship clear and away."

Meinora cut the lift on his shield. There was no point in drifting up here all day. The city came up at him rapidly, and he waited till he was just above the rooftops before checking his fall.

For a moment, he drifted aimlessly, just above the buildings, then he started quartering the city, examining the general plan. He looked about for Krenall, then laughed at himself. His assistant would be no more visible than he was.

"Krenall," he thought, "are you down?"

He caught a projection of one of the large fabrication plants at the edge of the city. "Yes, sir."

"Very good. We'll check that sort of thing later. Right now, we'll go to the market square. That should be the best place to pick up language and dialect."

Meinora rose above the highest rooftop and directed his course toward the center of the city.

Krenall turned away from the playback and shook his head. "Funny people," he remarked. "They've got me puzzled."

"What's the difficulty?"

Krenall bobbed his head at the playback. "So far, I've found plenty of evidence of a fairly well developed technology. But it's all concentrated in one spot—right in the Duchy of Quinbar. Everywhere else, they're primitive as they can get."

Meinora grinned. "Manpower's the cheapest thing they've got?"

"Something like that, sir. Or animal power. Of course, they do use a little water power, but their machinery's pretty crude and inefficient. Even their weapons and warfare methods are primitive. And that's getting toward the unusual, considering other factors."

"Have you worked out any possible reason for all this?"

"Well," Krenall stalled a little, "they're completely one-sided in their technology, of course. And it seems funny that they'd settle for that particular set of phenomena. It looks as though someone made a single, basic discovery once. And they stopped research right there."

"And?"

"Only a few people are allowed to know anything about scientific principles. They certainly don't encourage study."

"There's your answer." Meinora pointed at the playback. "They don't encourage either study or research. Quite the contrary, in fact. One family, the Quinbars, got their hands on a revolutionary discovery—the secret of the negative gravitic field. And they kept it completely secret." He jerked a thumb at the viewscreen.

"The results can be seen. They used their discovery to conquer their neighbors and eventually brought their entire planet under their rule.

They developed a few weapons and some gadgets, which they alone use." He spread his hands.

"They know a little about the magneto-gravitic field principles, but they've guarded their basic secret carefully and they haven't bothered to learn too much more. After all, if you're top dog in a neighborhood, and you can persuade or force your neighbors to stop trying to compete, you don't have to get any better, do you?" He picked up a tape reel and looked at it.

"Barskor made this one up," he added. "It's a pieced together manual for inquisitors. And it gives some pretty revealing sidelights on the state sponsored religion of Jorik. You see, research is not only forbidden by law. It's rank heresy, as well."

Krenall laughed shortly. "So, instead of developing a technological society, they've suppressed development for their own advantage. And they get rid of their excess population by colonization?"

"Right. And they've run out of habitable planets inside the nebula. Now, they've got to go outside." Meinora smiled. "They're in a bad way." He glanced up as the communicator buzzed.

"Somebody's coming in. Looks as though you'll have another report to integrate."

"I finally got something we've all been looking for." Agent Nerieda held up a small, transparent cube. Entrapped in the plastic was a tiny figure. The man had been standing, one hand outthrust, apparently trying with all the force of his being to put over some point of discussion.

Meinora took the cube and examined it for a moment.

"He wouldn't thank you for that pose if he saw it," he laughed. "One you just got?" He leaned forward to place the cube on the stage of the viewer.

Nerieda bobbed his head. "Yes, sir. Picked him up just a few hours ago, along with a few other representative figures I thought we might be interested in." He smiled. "He was trying his best to sell someone a jeweled bracelet. And he was running into some very highly developed sales resistance." He pointed at the viewer. "See, in his other hand?"

Meinora had been examining the figure projected before him with some interest.

"Thought you were working in the Barony of Darnol," he said.

"I am." Nerieda's eyes opened a little.

"This man's dressed like a typical native of the mountain country." Meinora pointed at the projected figure. "That jacket, for example, is distinctive. Only worn in Minaronik. What would he be doing in Darnol in that outfit?"

"Roving trader," explained Nerieda. "And he had another reason for that outfit of his. You've seen reports on the Duernian heretics?"

Meinora nodded. "Of course. And the Cwenronians, too. And several

other allegedly heretical sects and cults. There are several hundred jokers making excellent livings and picking up considerable prestige from inquisitions on them." He smiled. "It's developed into a pretty profitable industry, I gather. And their inquisitory methods seem to be a trifle drastic."

Nerieda chuckled softly and rubbed his chin. "Yes, sir. I've turned in tapes on a couple of small inquisitions myself. They always get a conviction. But that's just the smoke." His eyes narrowed a little. "There actually is some real fire." He pointed at the eager salesman in the viewer.

"This one's a real, live Duernian."

"Oh?" Meinora looked at the figure with renewed interest.

"He came into Darnol—the city, that is—with a load of luxury goods for sale. But he retained his mountaineer's costume. And that made me curious. So, I flipped my refraction shield and stuck with him for a while. Gave him a pretty good check-over. He was doing a lot of thinking about selling his goods, of course. But he was thinking even harder about something else." Nerieda pulled a small roll of tape from his pouch.

"In the first place, I got some detail on the Duernians from him. They are a rather loosely knit organization. A lot of them are travelers of one sort or another—legitimate travelers, that is. And a lot more are artisans and mechanics. The leaders, I gather, don't move around

so much. In fact, some of them are pretty soild citizens. They're a semi-religious, semipolitical group. On this planet, the two go together." He coughed dryly.

"And they don't buy all the teachings of Jorikan theology. In fact, they discard most of them. They've got a lot of ideas of their own, including some very serious doubts about the rights of the nobility, and some pretty sound basic theology. Also, they do quite a bit of experimentation, trying to find out what did it, and how much it took, and why it all happened, anyway." He looked at Meinora.

"You know, there was a time on this planet when the nobles could influence commoners by sheer mental dominance and coercion. I suppose that's how their ancestors became nobles in the first place. But that advantage is fading here on the home planet. The commoners—even some of the serfs—are developing resistance to that sort of thing, and even developing some noticeable ability along the line themselves. Although the nobles still depend to some extent on dominance, the emphasis is shifting more and more to force."

Meinora stirred a little. "I've studied that sort of thing," he said. "It's not an uncommon development in a first-stage civilization." He frowned. "Sometimes, it's resolved one way, sometimes another. But that inequality of psi power is eventually neutralized or eliminated somehow." He waved a hand.

"Sometimes, there's interbreeding. But that's virtually impossible here. They don't let such children live. Sometimes, it's completely shielded out by natural selection among the non-psi population." He pointed at the viewer. "How about this fellow?"

Nerieda looked at the pointing finger. "Sorry," he said. "This fellow is a minor member of the Duernian organization. He thinks of himself as a 'believer.' He was acting as a courier. Of course, he knew a lot of the basic principles of his organization, which aims to reform Jorikan religious belief and to obtain a lot of concessions for the commons and serfs. But he wasn't too well up on organizational methods or personnel. He was just carrying a message he'd passed on to someone who contacted him in the market. The unusual clothing was a mark of identification." He frowned.

"Unfortunately, he'd passed his message before I got on to him," he said regretfully, "so I didn't get a look at the contact, though I did pick up a little detail on him from the courier's mental projections. This courier hadn't had time to get out of the market and change clothes, though, when he saw a chance to make another sale. He stayed around."

"How did the contact make himself known?"

"They had a set of passwords. I think I can remember the routine without having to go to the tape."

Nerieda looked fixedly at the playback for a moment.

"Oh, yes," he said finally. "The contact said, 'You have been many years in the mountains?' And the courier answered, 'No. I have walked on the side of the road, through the mountains.' The contact looked him over for a while and said, 'And you have also sailed the broad sea?'" Nerieda grinned.

"The courier didn't answer that one. He just offered the guy an ornamented shell bracelet. The contact looked that over for a while, then remarked that he'd seen some of that work before—even had made some of it himself when his ship went on the rocks." Nerieda waved a hand.

"That reference to a ship on the rocks was the last countersign. I gathered that any pattern would have done to introduce it. After that, the courier haggled with him for a while over the bracelet and gave him a rambling yarn about a storm he'd allegedly been through some time back. That was the message." He frowned.

"Unfortunately, the courier had no idea of the key to whatever code they were using. He just repeated it by rote and he didn't know who'd originated the message. It was simply given to him by another courier. Someone's being extremely careful."

Meinora leaned forward. "It gives us something to work on, though," he remarked. He turned to Krenall, who had been listening unobtrusively.

"Have we got any other reports on the cult of Duern?"

"Not too much, sir." Krenall shook his head. "There are a lot of references from various clerics. And there's a little from one of the inquisitors on methods of detecting them and making them confess. He lists a series of questions and answers that are guaranteed to break 'em down." He smiled. "But we haven't had a contact with an actual cultist before. They seem to be both scarce and cautious."

"On this planet," Meinora remarked, "anyone who does any thinking at all would be cautious in the extreme. And they'd make themselves scarce, or become extinct. Quinbar is pretty careful not to let anything disturb his regime. And that state religion is valuable to him. It's one of the major factors that's kept his family in control for so long. So, he follows the family doctrine and uses a lot of capable people to maintain things just the way they are." He smiled ruefully.

"Look at the way they guard the secret of the antigrav," he added. "It's been known by the family for centuries, ever since old Vayber nel Quinbar was an obscure marquis. And no outsider has ever had a chance to get a hint on the secret. They even booby-trap the housings on the space drives.

"And there are a few other family secrets, too, like that heat concentrator and projector, which makes a pretty effective weapon. And

there's the energy accumulator." He got out of his chair.

"Well, guess we'll do well to check this over." He picked up the small roll of tape. "We can integrate it with the rest of our information and run it off for the rest of the team."

As he started to feed the roll into a playback, the viewscreen lit up to show a worried face.

"Is the chief there?"

Meinora stepped in front of the scanners. "Yes, Kerola?"

"Request permission to come in, sir. Weroaen is in trouble. They've got him in jail over in the earldom of Dorolik."

Walur, the peddler, sidled into the tavern and looked around the large guest room. There was a vacant place by one wall, and he went to it, carefully putting his pack on the floor between his feet as he sat down.

Peddlers, he had found, were tolerated in the taverns, so long as they made no effort to disturb customers by showing their wares, and so long as they could produce coin with which to pay for their refreshment.

Walur settled his heavy cap over his head. It made an effective camouflage for his mentacom circlet. He relaxed and made a closer examination of the room.

At the next table were some of the serfs of the earl of Dorolik. They drank morosely, each concerned with his own immediate problems. Occasionally, they exchanged brief remarks.

There was very little of value there by this time, Walur thought. He'd checked serfs and their families many times. Their thoughts and problems fell into definite patterns and types. And as Agent Weroaen, he had taped and classified each of these types. They had nothing to do with his reason for being here. He turned his attention to another table.

This was more productive. The man appeared to be a small moneylender. As he drank, he consulted his account book, evidently planning his activities for the following day. But he was far more concerned with the carefully coded notes in his book than with his accounts of debits and credits.

This was the man! Weroaen forgot the rest of the customers in the tavern. A barmaid approached and he absently ordered a glass and shoved out a coin. Then, he returned his full attention to Laduro, the moneylender. As a minor financier, the man was of little interest. But as a moderator of the Followers of Duern, he was a valuable source of information as well as a possible future ally.

The man was working out a course of instruction for some of his teachers, who were due to make contact with various freemen and artisans of the area—the believers.

He had received some new information recently from an exchange courier, and he wished to have it distributed. Some of his people

would be able to make use of it.

And he was somewhat concerned over the coming visit of the Inquisitor, Markorik, who was to investigate heresy in the earldom. Part of Laduro's plans included methods of evading attention from the inquisitors and of protecting his group of believers from persecution.

Weroaen sat quietly, taking an occasional sip from his tankard and observing Laduro closely. He picked up details of the organization and aims of the cult. He picked up some of their future plans and methods of teaching and of proselyting. And he gradually built up an understanding of the Duernians.

He completely ignored the five men who entered and replaced a couple of tenant farmers at a nearby table.

Feldor, man-at-arms of the Inquisition, reined up his mount and turned in the saddle.

"Now, here's a fair looking tavern," he called back. "What say we have a cup or two. My throat's dry from the dust."

His four companions turned to look at the building.

"But what about the captain?" asked one of them doubtfully. "He wanted us to report directly to him in town upon our arrival."

"That for the captain." Feldor threw the reins over his mount's head and swung to the ground. "We haven't arrived in town yet, have we? So, we were delayed for a time on the road. I'll think of something if he asks. But anyway, our captain'll be taking his ease in the town by now, if I know anything of him. A lot he cares when we report, so we are present by morning." He walked to the tavern, then paused in the doorway.

"Come on," he said. "Old Markorik's having wine with the earl by this time, I'll warrant. And the captain won't leave his own warm inn—not this night. So why should we deprive ourselves needlessly? It's me for a good drink and a warm room." He turned and entered.

For a moment, his companions hesitated. Then they dismounted and followed him.

Inside, Feldor swaggered to a table. Wordlessly, he glared at the two serfs who occupied seats on the bench. Slowly, his hand approached his sword hilt.

The two men took the hint. They looked away from him, picked up their mugs, and went in search of other seats. Feldor turned and waved an arm, summoning his fellows.

A barmaid hurried over.

"Wine," demanded Feldor. "Wine. And see it's good, and in plenty."

He looked disparagingly at the cups the girl brought back.

"You call those tiny things winecups? I asked for wine, Girl. I want something to drink, not just a drop to roll about on my tongue. Back with you, and bring wine in full-sized tankards." He picked up the cup, held it to the light for a moment, then gulped it down.

"It's a taste, at least," he remarked.

A companion looked at him. "Be careful, Feldor," he warned. "This mountain wine is said to be powerful stuff. You'll need a clear head and a steady hand tomorrow."

"A clear head!" Feldor laughed derisively. "A clear head, he says. Do you think I'm a mere child, to worry about tiny drops of wine?" He picked up the large, silver cup the barmaid had set in front of him, drank thirstily, and looked about the room.

The two serfs he had displaced had taken seats close to a peddler, who sat inconspicuously by the wall. For a few minutes, Feldor watched this man. At last, he turned away disgustedly.

"Niggling fellow," he thought, "to so husband his cup. And I'll warrant he could afford all the wine his wrinkled skin could hold."

He finished his wine and called for more. And more. Time passed and the room became blurred. He looked again over toward the wall where the peddler still sat.

With an effort, he focused his eyes on the man, then looked at the cup before him. Apparently it hadn't been moved. And the peddler sat, a slight smile on his face, seeming to see no one.

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Feldor got out of his seat and crossed the room, weaving a little, yet still purposeful. He stopped before the peddler, sweeping a hand out and knocking the man's cap to the floor. The peddler looked at him in shocked surprise.

"If you can't afford your drinks," snarled Feldor, "why did you come? Get along with you. Drink like a man!" He picked up the cup before Weroaen, sloshed the little wine remaining in it for a moment, then slammed it to the table and turned.

"Ho, Barmaid," he s h o u t e d. "Bring this man a drink—a large drink this time. And bring another for me. I shall see to it he drinks. Aye, and pays, too." He grasped the peddler's collar.

Weroaen shook his head dazedly. He had neglected to think of anyone else in the room in his preoccupation with the Duernian moderator. And this was an unusual development in any event. Now, without his mentacom, he was in no position to influence this drunken swordsman before him. He leaned over to retrieve his cap. Feldor stopped him roughly.

"So," he growled, tightening his grip on Weroaen's collar. "So, you reach for your hat. You think to sneak away to avoid the company of men. Oh, no! This shall not be! We'll have a party. You peddlers have coin, I know. And we'll give you a taste of real life. You shall be host to his lordship's men-at-arms this night."

He jumped on the table, then down on the other side, to seize Weroaen by the arm. Gripping him tightly, he started dragging him toward the end of the table.

Weroaen's free hand slipped toward his belt. This drunk needed a

lesson, he thought. And he needed it badly.

Then he hesitated. Of course it would be a simple matter to subdue these men-at-arms, but it would prove very little. And he would have to use obviously unusual means. There would be a pursuit and many people would hear of the incident and ask many questions.

To be sure, in an extremity, he could use his equipment to preserve his own life. Regulations provided for that. But if such use chanced betrayal of advanced equipment, he would have to resign his status. And Weroaen had no desire to leave the Stellar Guard.

Besides, he thought, this was no extremity. After all, he might be subject to a few indignities. And he'd have to settle a large bill with the tavern owner. But that was a minor matter, after all, and certainly didn't involve mortal danger.

Sooner or later, during the evening he would have a chance to retrieve his cap. And the men-at-arms would have quite an interesting time explaining their presence asleep on a tavern floor in the morning. He allowed himself to be dragged across the floor.

Feldor's companions had stood, watching the disturbance. One of them looked toward the door, then stretched out an arm to grab Feldor by the shoulder.

"The captain," he whispered urgently. "In the door."

Feldor looked around, then stiffened. The captain was standing there. Several men-at-arms flanked him and he was looking over the scuffle with obvious disapproval.

Suddenly, Feldor thrust Weroaen into the arms of his comrades and went toward his superior.

"We stopped, sir," he improvised quickly, "to investigate this tavern, which seemed unduly crowded. And we found this man," he pointed accusingly at Weroaen, "trying to influence these two." He pointed out the pair of serfs who had been sitting near Weroaen.

"This man," he added, "was trying to persuade these two good farmers to accept the doctrines of the Duernian heretics. But so far as we could determine, they were having none of his lying words."

He beckoned to the serfs commandingly. "We were correct, were we not, in thinking you were rejecting this man's false doctrine?"

The two serfs looked for a moment at each other, considering this question. They faced the captain and nodded doubtfully.

The captain looked at Feldor suspiciously, then examined Weroaen, who stood between two men-at-arms. Finally, the officer nodded curtly.

"Very well," he said. "We shall examine further into the matter. Bring him along. And bring his goods and possessions as well. They may contain evidence." He pointed at the two serfs.

"You two will come with us as well. We shall have need of your testimony." He turned and went out.

Feldor crossed to the serfs. "Come

along, you two," he ordered. In a lower tone, he muttered: "And see to it you testify well. The inquisitor is impatient with laggard witnesses."

One of the serfs shrugged. "We will testify, master," he promised. "The peddler is nothing to us. And we love life."

Lord Markorik, Inquisitor and Scourge of Heretics, looked up in annoyance as his captain stepped before him.

"Well, Gurol, and what brings you here at this hour? Surely you don't have to consult me on your disciplinary problems. And unless it be of pressing importance, this is no time for reports."

Captain Gurol nodded. "I am aware of that, your lordship," he said smoothly, "and I would never disturb your lordship for anything trivial. But I bring news of a Duernian heretic, caught in the very act of proselyting in a tavern not far from this town. Some of my men apprehended him and we have examined the witnesses and questioned the culprit. He has no proper business, but is posing as a wandering peddler. Would you examine him on the morrow perhaps, sir?"

Markorik set his winecup down. "An heretic, eh? And caught this very night of our arrival. This is most exemplary, captain. You and your men deserve praise for your devotion to duty." He turned to the earl.

"As I was telling you, Dorolik," he remarked, "we rest little. And we lose no time in uprooting and exposing heresy, wherever it may be found." He paused, looking up at Gurol.

"Hold me the man," he ordered, "for examination tomorrow. I shall question him after midday." He waved a hand negligently, dismissing the captain from his presence.

"Perhaps, Dorolik," he continued, "you and your household would see how we of the Church perform our examinations and inquisitions?"

Dorolik nodded hastily. "Oh, to be sure," he agreed. "And perhaps we may learn from your methods. I shall have the castle chapel readied for your disposal. And I shall see to it that all my people attend, that they may see how justice is dispensed to those who endanger the tranquility of State and Church."

He turned back to the table for a moment, noting the level of the wine in Markorik's cup, then beckoned to a page before returning his attention to Markorik.

"These Duernians," he remarked, "have given trouble for long?"

Markorik frowned portentiously. "Yes," he agreed. "Yes, they have been a menace to all right-thinking people of the realm for some years. But we're watching them now. And we're pulling them from their hideaways, one by one."

"A praiseworthy work." Dorolik nodded understandingly. "And I have no doubt they'll soon be eliminated." He paused. "I noted your captain said this man was posing as a wandering peddler. Perhaps he

had come from the lowlands to the south?" He sighed.

"We get so many criminals from them. I wish they would take care of their own trials, rather than leaving it up to us here in this peaceful, law-abiding land of ours."

"And this is the Earldom of Dorolik?" Klion Meinora looked into the viewsphere.

He picked out details in the peaceful scene below. Men and animals moved about the fields and through several small villages, evidently engrossed in the day's work. A sawmill straddled the stream which wound through fields and woods, sparkling in the sun and showing occasional white flecks as it sped over rocks. And a single road crossed the stream, to wind through the villages before it climbed a steep hill to enter a medium-sized town, where it lost its identity.

The streets of the town wandered in seeming aimlessness among the houses and buildings which clustered about, to completely surround the hill. A faint suggestion of a spiral pattern still remained, to tell of the time when a lone road had twisted about the hill, to lead to the castle at its top.

"This is it." Kerola waved a hand. "It's a rather small fief, dependent on the duchy of Minaronik. And the earl is constantly trying to improve his standing a little. He's got a sort of running feud with the Marquis of Kiranik, down in the valley. They take turns knifing each other in the back. He's tried several nasty little schemes to get something on the duke, himself. He's really a nice guy."

"But not an unusual type here?" Meinora laughed.

"No, sir. Not too unusual."

"You were investigating the earl's household, you said?"

"Yes. You see, we'd completed the main duchy and the March of Kiranik. Weroaen had been working on the commoners and their reactions right along, and he said he didn't think he'd need any direct help. Said he had his own classification system worked up and all he had to do was fill in a little more data to get a full picture.

"Besides, he thought he had a line on this cult that's been giving the emperor and his religious hierarchy a bad time. You know, the Duernians. They've been pretty hard to trace, you know. But he thought he had a lead on one of their leaders. He'd traced a couple of couriers and he wanted to follow that one up." Kerola pointed at his costume.

"In the meantime, I was getting a fair integration on the upper classes. I've been posing as a traveling musician for some time, and have actually built up something of a reputation." He laughed amusedly. "In fact, if I got stranded, I think I could make a pretty good living that way. In any event, I shifted to Dorolik's castle and started putting on performances." He pointed to the hilltop with its walls and towers.

"It looked as though Weroaen and

I were going to pick up convergent lines when this inquisitor, Markorik, came in. Seems Markorik had some information on the same moderator Weroaen had been tracing. I was picking up quite a bit from that inquisitor when his captain came in and announced they'd picked up a peddler on a charge of heresy. Then, they got through questioning Weroaen and tossed him into a cell." He grimaced.

"Weroaen had his mentacom sewed into his cap, and, like all peddlers, he wore that cap all the time. But he's not a full telepath by any means and when they got that cap, he was in a bad way. When they chucked him in for the rest of the night, someone threw his stuff into the cell. Then, he got into contact with me right away." He grinned reminiscently.

"He was all for tearing the place apart. Seems they kicked him around a good bit. And they tried their mental coercion on him. It didn't work very well of course, but he was pretty well shaken up and wild as they come. I told him to hold still and wait for me. Then, I got out of the castle and streaked for the ship."

Meinora turned away from the

viewsphere. "Best thing you could do," he remarked. "We'll get him out somehow." He walked toward the control room exit.

"Well, let's get down to that castle. I want to be there when Markorik starts his questioning." He slid the panel aside, then turned.

"Nerieda," he said, "better come along. And, Krenall, you take charge of the ship. Call in some of the others. I hope the three of us can handle this one, but it won't hurt a thing to have help available."

He went to the debarkation platform. It looked touchy, he thought. Somehow, Agent Weroaen must be removed from that castle down there. And the crowd of Jorikan nobles, men-at-arms, servitors, and church investigators must have no suspicion that there had been anything supernatural about the escape. Meinora shook his head.

How would a native of the planet escape from his guards and from that castle? Especially, how would he escape when he was the center of interest and attention?

He shook his head and stepped aside. "Go ahead, Kerola," he ordered. "You can guide us to the chapel."

Weroaen followed his guards into the chapel. Behind him, two more guards followed, alert to prevent any attempt at escape. The small procession filed up the aisle to the dais, other men-at-arms making way for them through the crowd. Finally, the leading guards separated and stopped, to face their prisoner.

"We will wait here," said a guard. "Do you kneel, prisoner."

Weroaen was aware of a reassuring thought.

"Go along with their ceremony, Weroaen. We'll see what develops and try to create a diversion. Where is your mentacom?"

Weroaen knelt and bowed his head submissively.

"It's out in the anteroom, sir, along with some of the other caps."

"Good. Get it, Nerieda. We're going to need it later. Besides, we don't want that thing floating around. Some idiot might try it on."

Markorik paced to the dais, flanked by two of his men-at-arms, who carried his symbols of office—a large book and a rod, surmounted with a jewellike lens. A young assistant followed, carrying regalia. The inquisitor stepped up to the dais and accepted the book from its bearer. He spread it out on the book rest and looked at it for a moment.

The assistant respectfully helped him with his heavy, jeweled collar and his headdress, straightened out his robes, and stepped away.

Markorik stood for a few seconds, looking over the crowd in the chapel, then accepted his rod of office. Finally, he looked down at Weroaen, his face set in stern disapproval.

"Arise, prisoner, and stand before this tribunal."

He waited, watching coldly as Weroaen gained his feet and stepped close to the lectern.

"What is your name, prisoner?"

"Men call me Walur, the—"

Markorik slapped his hand down on the book rest.

"Never mind what men call you. Give me your name—your real name, mind? And don't try your silly evasions with me."

"I am Walur, the peddler, my lord."

"And you know, of course, why you have been brought here?"

"No, my lord. Men seized me. They mistreated me. And then they called me by names with which I am unfamiliar. I should be glad—"

Again, Markorik's hand came down on the book rest. It made a loud report, which echoed through the chapel.

"You have been warned, Heretic. I will brook no evasion. You are an unbeliever in the things held sacred by all good and loyal men of the realm. In short, you are an heretic. You are a follower of the heretical dogs who call themselves the Duernians. Now, are you not?"

Weroaen hesitated and a commanding thought was directed at him, completely overriding the efforts of the inquisitor to impose pressure.

"Follow my lead. There are certain answers he expects. And we'll give 'em to him, right out of the book. I'm getting an idea."

Weroaen shook his head. "I am no unbeliever, my lord."

"What, then, do you believe?"

"I believe in whatever you and other good lords tell me to believe."

For a brief instant, Markorik's glance was almost affectionate. This man was behaving precisely according to pattern. Here, most certainly, was a perfect subject for inquisition. And he'd break down and give names. Oh, most surely, he would break down. His gaze hardened to sternness again.

"And you will swear, then, that you have never learned anything contrary to the teachings of the Great Church of Jorik?"

"If you tell me I should swear, lord, then I shall swear."

"I tell you nothing. You are the accused. You, and you alone, are the one who must clear himself of the stain of accusation. Will you swear?"

"Yes, my lord." Weroaen dropped his eyes submissively.

"And you will swear oaths without number, hoping thereby to escape the just fate meted out to heretics?"

"Oaths without number, my lord?"

"Without number," said Markorik threateningly. "For know, Heretic, that we have witnesses to your perfidy. And so many oaths as you shall swear, then so many more will we demand of you. And you shall swear until, according to your twisted belief, you shall swear yourself into

the punishment eternal." He frowned and pointed with his rod of office.

"Now, will you swear?"

"He's hooked. Now, haul him in!"

Weroaen clasped his hands in a gesture of hopeless resignation.

"My lord," he said pleadingly, "I perceive I cannot deceive you further. You know I may not continuously swear oaths without condemning myself to the eternal nothing. I shall, then, confess my belief." He bowed his head.

"Yes, my lord, I have been of the followers of Duern, the Deliverer."

"Ah," cried Markorik. "And having thrown yourself on the mercy of this tribunal, and by your own confession, then you are further willing to name your accomplices, that they may be purged of their heresy?"

"My lord, I must. Having confessed in one, I shall have to confess in all." Weroaen looked up, then glanced about the chapel.

"My moderator and teacher," he said distinctly, "is Karonu, Earl of Dorolik. And his captain, Odurnis, is my companion in our order."

Markorik looked over the chapel, then made a tiny motion with his hand. His men-at-arms straightened, suddenly alert.

"And there are others in this household?"

"Yes, my lord. Many others. Too many to name here." Weroaen looked around.

Dorolik came to his feet, his face flaming.

"This man lies," he shouted furiously. "By wild accusation, he tries to throw confusion and to discredit this inquisition."

Markorik looked at him coldly. "It is not the inquisition he discredits," he remarked. "And what would he gain thus?"

"Why, he—" Dorolik looked about the chapel. What, he wondered, did the man expect to gain? He was well guarded both by his own and by the inquisitor's men. He could have no hope of escape. The earl's face slowly drained of blood.

Anyone, he knew, even a condemned heretic, could make accusation to an inquisitor. This man was confessing and naming him, Dorolik, as his teacher in that confession. And who, when accused, had ever been held blameless?

Markorik raised an arm. "This," he announced, "brings a new aspect to our inquisition. I shall withhold further action until I have notified my superiors." He nodded to Weroaen's guards.

"Take this man away. We shall hold him as a witness."

"Nerieda! Kerola!"

One of the earl's men-at-arms suddenly pitched forward. He thrust his arms out to preserve his balance and grabbed one of Weroaen's guards, who thrust him back and drew his sword, only to be struck

again by another man-at-arms, who came from a new direction. As he went down, still another inquisition guard found himself assaulted. He dodged lightly away, swinging his sword in an accurate arc, which ended at the nape of his assailant's neck.

Someone shouted, "To the earl! Up, Dorolik!"

Inquisitorial men-at-arms, weapons drawn, surrounded Markorik, who raised his lensed rod and held it in readiness. A tight group, the inquisitor's party started hacking their way toward the chapel door, careless of who they struck. The earl's men-at-arms moved to cut off their retreat, shouting angrily.

Weroaen ducked behind the lectern, then looked quickly around. His mentacom suddenly materialized in front of him and he slapped it on his head then pressed firmly on his belt. And he was no longer visible.

Activating his flight modulator, he guided himself up to the ceiling, then took a straight path out the door.

Once in the open, he stopped to look down at the scene of battle.

It was developing into a first-class brawl and he watched for a few minutes, with interest. Some of those men-at-arms, he thought, had spent some time learning to handle their heavy weapons. And they could have given valuable pointers to good swordsmen of any planet. Now, they were engaged in giving proof positive of their ability.

Markorik came through the throng, pointing his short rod about at would-be assailants. Men clutched at their bodies and dropped to the ground, twisting in agony before they became still. The inquisitor made his way toward the stables.

"Come on," ordered Meinora. "Make certain that inquisitor escapes. He might become very useful."

Laduro, the moneylender, sat silently in the corner of the guest room. Since the furor due to the trial of the earl of Dorolik, he had dared make little contact with other Duernians. He looked unhappily at the tankard before him.

Of course, he thought, it had been an unbelievable bit of luck that the drunken man-at-arms had picked that peddler for a victim. It could have just as easily been a moneylender. And his fortune might not have been as good as the peddler's had been. He stirred uneasily in his seat.

The peddler, he thought, had been a resourceful man. He, himself, would never have thought of the device of accusing a noble and thus creating confusion. But how had the man made good his escape? Of course, his accusation of the earl had converted his inquisition into a complete chaos. But it had been blind, good fortune that had caused the men-at-arms to lose their heads. And where had the peddler gone? Certainly, thought Laduro, he had not contacted the followers of Duern.

The moneylender lifted his tank-

ard and sipped. The peddler had certainly spread chaos. Markorik had escaped the earldom by the aid of the magic stick he carried. And the emperor's great ships had come to Dorolik. Of course, the earl's people in the castle had put up such defense as they were able. But once again, the hopelessness of defense against the flying ships of the emperor had been demonstrated. Dorolik had collapsed in ruins and then its earl had met the fate of a heretic.

Laduro shook his head. How, he wondered, could the Following of Duern do better? All he and his people had been able to do, he remembered, had been to remove their believers from the doomed earldom. And that had been an accomplishment in itself.

Now, the little spark struck at Dorolik had become a raging fire. The inquisition was flaming across the land and no one seemed to be safe from accusation. And none were ever declared blameless. No rank, no influence, no record of piety served as protection.

The inquisitors struck out at all alike. Rich, poor, noble, serf. No one was safe from accusation and trial. Laduro shook his head. At least, it made little difference whether one was of the Following or not. The believers were at least as safe as anyone. Almost, it would seem, safer. There had been rumors— He shook his head. That was idle conjecture.

He turned his head, examining the room. It was not too dissimilar from the familiar room in Dorolik, he thought. There were the same tables, the same waitresses—even the same customers. Oh, of course, the faces were different, but—

The door opened and a breath of cold air came in. Laduro looked searchingly at the peddler who sidled through the door, closed it quickly, and eyed the roomful of people cautiously. The man looked familiar.

The peddler's gaze traveled about the room, then centered on the moneylender. The man approached a waitress, spoke apologetically, then came toward the moneylender's table.

"Do you mind, Good Friend, if I sit with you for a time? I am weary from traveling too long on the side of the road."

Laduro examined the man carefully. "I, too, have been a traveler," he admitted, "stumbling over the stony way."

The peddler removed his pack and set it on the floor. "And you have also labored over the wide sea, only to be stranded on the rocks as I have, I'll warrant?"

The formula was complete. Laduro looked around the room, alert for anyone who might be paying undue attention to his new acquaintance or to himself. The waitress was approaching, but no one else was giving any notice to the men in the corner.

The barmaid took the coin offered, examined it closely, and left.

Laduro turned to the peddler.

"We have met before, perhaps?"

"Yes. May this meeting be more fortunate than the last." The peddler reached out and picked up his tankard. "I have been looking for you," he explained, "for some time, as I have been looking for others. You have been hard to find." He sipped, then set the tankard down and looked Laduro in the eye.

"Let us not worry further about codes," he said. "What would you be able to do if you had the secrets of the Great Ships of Jorik, the Lift of Alerom, and the other magic of the emperor?"

Laduro blinked and raised his tankard to his lips, collecting his thoughts. At last, he reached a decision.

"Why," he said, "the Following is large. And we number artisans of every trade." Cautiously, he looked about the large room.

"We might be able to do many things," he added. "And we might gain many more believers, since it profits a man little to follow the emperor in these days." He picked up his tankard and drank quickly, draining it. Then he looked at the peddler's cup.

"This lowlands beer becomes tiresome," he said. "And here is no place to talk freely. Follow me, Good Friend, and we will go to another place I know of. There, perhaps we may find others with whom we may talk in full fellowship and trust."

Barskor looked up as Meinora walked into the control room.

"Reports all in, sir?"

"Just reviewed the last one." Meinora leaned against a safety rail and rubbed a hand across his cheek. "I'll work up the summary while we're on the way out." He yawned. "Little tired right now."

"The course data through the curtain will have to go in, won't it?"

"Oh, sure." Meinora looked up. "Got your incoming data all tabulated on one of the reels. It's cued so we can feed in the rest soon's we come out into normal space. Should be a smoother trip, this time."

Barskor nodded. "Should be," he agreed. "Present data'll let us anticipate a little. By the time we're out, I'll have some pretty complete data to feed in." He set up a course and punched the drive actuators, then glanced at the viewsphere and leaned back.

"She'll be all right on auto till we get out of the system's grav field," he remarked. "Then I can run on out to the curtain before I have anything to worry about. Meantime, I've got a question. That is, if you don't mind."

"Oh? Don't mind a bit. What's wrong?"

"Seemed as though Delman and I got on the sidelines toward the last. We were working Quinbar, you know, sir. Most of the time, we were phased in with the rest of the team, but something went by us anyway." He shook his head.

"Toward the end, things moved so fast we didn't get much excepting

the viewpoint of the emperor and his people. And they never found out what hit 'em. What actually happened?"

Meinora laughed. "You know," he said, "you got practically everything anyone else did. Once the thing got rolling, we didn't do much at all. And things did happen pretty fast. Of course, you know about some of the team members getting to work on various inquisitors and agitating them?"

"Oh, sure." Barskor grinned. "Did a little of that myself."

"Well, that set the stage. Then Weroaen contacted the Followers of Duern. He posed as a renegade member of the House of Quinbar who had seen the truth, and he claimed to have stolen the plans for practically all the technical equipment the emperor had.

"He handed over the antigrav, the energy accumulator, and all the other applications of magneto-gravitics that Quinbar's people had ever thought of. He also gave them plans for a flier." He spread his hands.

"None of that was new knowledge to this planet, you know. It had been discovered and suppressed, to be used by a small group. So it was legitimate to publish it." He shrugged.

"Of course, we were guilty of a little skullduggery," he admitted, "in that we influenced the inquisitors to make life so miserable for everyone from the top nobles on down that they were ripe for anything. And we kept the inquisition so hot no one had any time to bother the real Duernians." He smiled.

"The main body of people virtually stampeded to come to the party when the Followers started tearing into Quinbar," he added.

"Of course, there's one new thing," he said thoughtfully. "That modulated beam they used to rip up Quinbar's factories and his castle wasn't anything we'd given them. They dreamed that one up for themselves from the data they were furnished." He shook his head.

"You know, I think they'll be coming out to look over the galaxy one day in the very near future. But this time, I don't think they'll see any necessity for sending missionaries."

THE END

IN TIMES TO COME

Next month's issue features a yarn by Eric Frank Russell—"Plus X." Personally, I loved it. It's about a man captured by aliens during an interstellar war. Thing is—they should have given him a dozen atomic bombs, a space cruiser, and freedom; it would have been cheaper. In his efforts to escape, he did much, much more damage—he and his two heads.

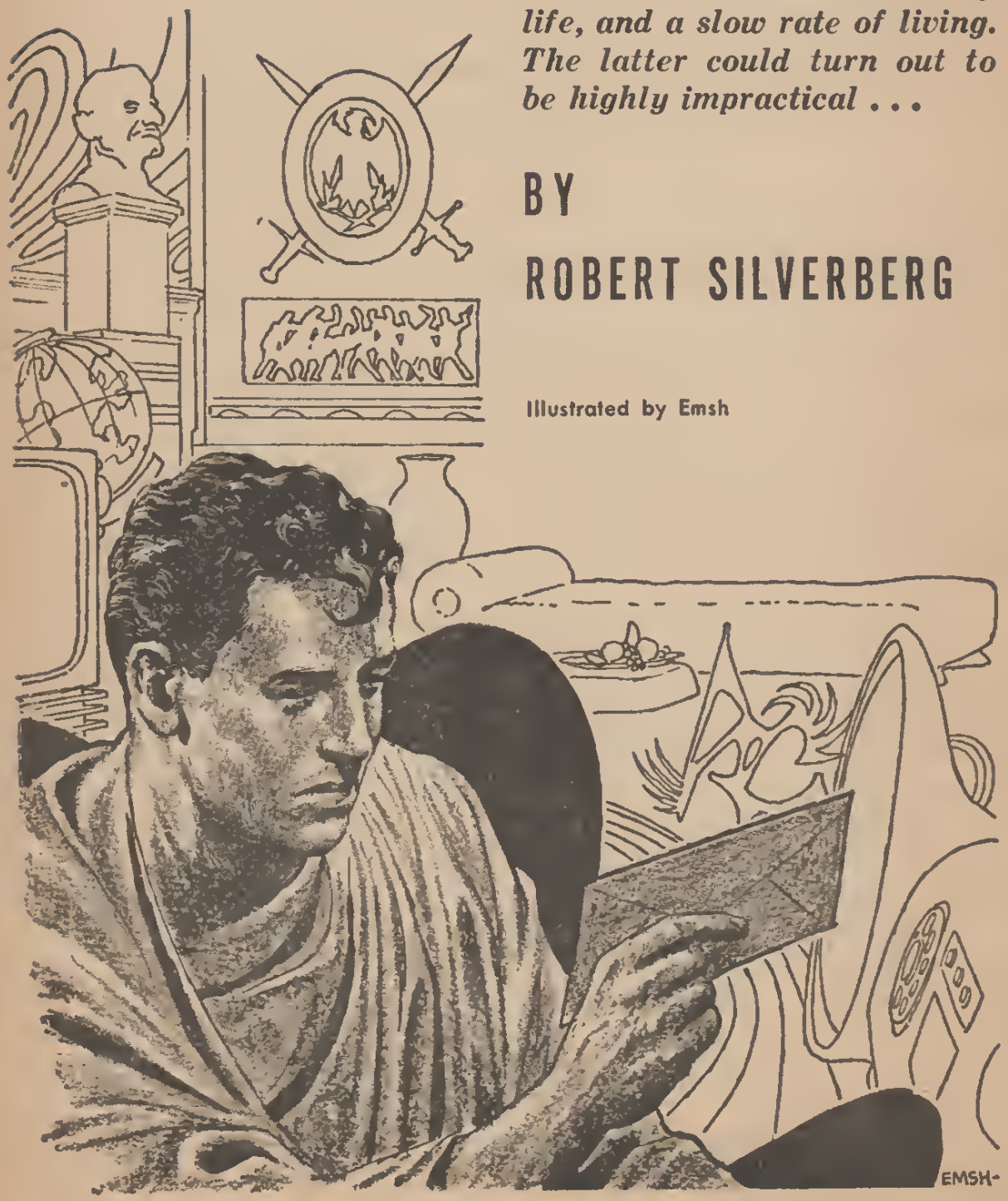
THE EDITOR.

TO BE CONTINUED

Could be there's an important difference between a long life, and a slow rate of living. The latter could turn out to be highly impractical . . .

BY ROBERT SILVERBERG

Illustrated by Emsh



Gaius Titus Menenius sat thoughtfully in his oddly-decorated apartment on Park Avenue, staring at the envelope that had just arrived. He contemplated it for a moment, noting with amusement that he was actually somewhat perturbed over the possible nature of its contents.

After a moment he elbowed up from the red contour-chair and crossed the room in three bounds. Still holding the envelope, he eased himself down on the long green couch near the wall, and, extending himself full-length, slit the envelope open with a neat flick of his fingernail. The medical report was within, as he had expected.

"Dear Mr. Riswell," it read. "I am herewith enclosing a copy of the laboratory report concerning your examination last week. I am pleased to report that our findings are positive—emphatically so. In view of our conversation, I am sure this finding will be extremely pleasing to you, and, of course, to your wife. Sincerely, F. D. Rowcliff, M.D."

Menenius read the letter through once again, examined the enclosed report, and allowed his face to open in a wide grin. It was almost an anticlimax, after all these centuries. He couldn't bring himself to become very excited over it—not any more.

He stood up and stretched happily. "Well, Mr. Riswell," he said to himself, "I think this calls for a drink. In fact, a night on the town."

He chose a smart dinner jacket from his wardrobe and moved toward the door. It swung open at his approach. He went out into the corridor and disappeared into the elevator, whistling gayly, his mind full of new plans and new thoughts.

It was a fine feeling. After two thousand years of waiting, he had finally achieved his maturity. He could have a son. At last!

"Good afternoon, Mr. Schuyler," said the barman. "Will it be the usual, sir?"

"Martini, of course," said W. M. Schuyler IV, seating himself casually on the padded stool in front of the bar.

Behind the projected personality of W. M. Schuyler IV, Gaius Titus smiled, mentally. W. M. Schuyler *always* drank Martinis. And they had pretty well better be dry—very dry.

The baroque strains of a Vivaldi violin concerto sang softly in the background. Schuyler watched the TV accompaniment—a dancing swirl of colors that moved with the music.

"Good afternoon, Miss Vanderpool," he heard the barman say. "An Old Fashioned?"

Schuyler took another sip of his Martini and looked up. The girl had appeared suddenly and had taken the seat next to him, looking her usual cool self.

"Sharon!" he said, putting just the right amount of exclamation point after it.

She turned to look at him and smiled, disclosing a brilliantly white array of perfect teeth. "Bill! I didn't notice you! How long have you been here?"

TO BE CONTINUED

"Just arrived," Schuyler told her. "Just about a minute ago."

The barman put her drink down in front of her. She took a long sip without removing her eyes from him. Schuyler met her glance, and behind his eyes Gaius Titus was coldly appraising her in a new light.

He had met her in Kavanaugh's a month before, and he had readily enough added her to the string. Why not? She was young, pretty, intelligent, and made a pleasant companion. There had been others like her —a thousand others, two thousand, five thousand. One gets to meet quite a few in two millennia.

Only now Gaius Titus was finally mature, and had different needs. The string of girls to which Sharon belonged was going to be cut.

He wanted a wife.

"How's the lackey of Wall Street?" Sharon asked. "Still coining money faster than you know how to spend it?"

"I'll leave that for you to decide," he said. He signaled for two more drinks. "Care to take in a concert tonight, perchance? The Bach Group's giving a benefit this evening, you know, and I'm told there still are a few hundred-dollar seats left—"

There, Gaius Titus thought. The bait has been cast. She ought to respond.

She whistled, a long, low, sophisticated whistle. "I'd venture that business is fairly good, then," she said. Her eyes fell. "But I don't want to let you go to all that expense on my account, Bill."

"It's nothing," Schuyler insisted, while Gaius Titus continued to weigh her in the balance. "They're doing the Fourth Brandenburg, and Renoli's playing the Goldberg Variations. How about?"

She met his gaze evenly. "Sorry, Bill. I have something else on for the evening." Her tone left no doubt in Schuyler's mind that there was little point pressing the discussion any further. Gaius Titus felt a sharp pang of disappointment.

Schuyler lifted his hand, palm forward. "Say no more! I should have known you'd be booked up for tonight already." He paused. "What about tomorrow?" he asked, after a moment. "There's a reading of Webster's 'Duchess of Malfi' down at the Dramatist's League. It's been one of my favorite plays for a long time."

Silently smiling, he waited for her reply. The Webster was, indeed, a long-time favorite. Gaius Titus recalled having attended one of its first performances, during his short employ in the court of James I. During the next three and a half centuries, he had formed a sentimental attachment for the creaky old melodrama.

"Not tomorrow either," Sharon said. "Some other night, Bill."

"All right," he said. "Some other night."

He reached out a hand and put it over hers, and they fell silent, lis-

tening to the Vivaldi in the background. He contemplated her high, sharp cheekbones in the purple half-light, wondering if she could be the one to bear the child he had waited for so long.

She had parried all his thrusts in a fashion that surprised him. She was not at all impressed by his display of wealth and culture. Titus reflected sadly that, perhaps, his Schuyler facet had been inadequate for her.

No, he thought, rejecting the idea. The haunting slow movement of the Vivaldi faded to its end and a lively allegro took its place. No; he had had too much experience in calculating personality-facets to fit the individual to have erred. He was certain that W. M. Schuyler IV was capable of handling Sharon.

For the first few hundred years of his unexpectedly long life, Gaius Titus had been forced to adopt the practice of turning on and off different personalities as a matter of mere survival. Things had been easy for a while after the fall of Rome, but with the coming of the Middle Ages he had needed all his skill to keep from running afoul of the superstitious. He had carefully built up a series of masks, of false fronts, as a survival mechanism.

How many times had he heard someone tell him, in jest, "You ought to be on the stage?" It struck home. He *was* on the stage. He *was* on the stage. He was a man of many roles. Somewhere, beneath it all, was the unalterable personality of Gaius Titus Menenius, *cives Romanus,* casting the shadows that were his many masks. But Gaius Titus was far below the surface—the surface which, at the moment, was W. M. Schuyler IV; which had been Preston Riswell the week before, when he had visited the doctor for that fateful examination; which could be Leslie MacGregor or Sam Spielman or Phil Carlson tomorrow, depending on where Gaius Titus was, in what circumstances, and talking to whom. There was only one person he did not dare to be, and that was himself.

He wasn't immortal; he knew that. But he was *relatively* immortal. His life-span was tremendously decelerated, and it had taken him two thousand years to become, physically, a fertile adult. His span was roughly a hundred times that of a normal man's. And, according to what he had learned in the last century, his longevity should be transmittible genetically. All he needed now was someone to transmit it to.

Was it dominant? That he didn't know. That was the gamble he'd be making. He wondered what it would be like to watch his children and his children's children shrivel with age. Not pleasant, he thought.

The conversation with Sharon lagged; it was obvious that something was wrong with his Schuyler facet, at least so far as she was concerned, though he was unable to see where the trouble lay. After a few more minutes of disjointed chatter, she excused herself and left the bar.

TO BE CONTINUED

He watched her go. She had eluded him neatly. Where to next?

He thought he knew.

The East End bar was far downtown and not very reputable. Gaius Titus pushed through the revolving door and headed for the counter.

"Hi, Sam. Howsa boy?" the bartender said.

"Let's have a beer, Jerry." The bartender shoved a beer out toward the short, swarthy man in the leather jacket.

"Things all right?"

"Can't complain, Jerry. How's business?" Sam Spielman asked, as he lifted the beer to his mouth.

"It's lousy."

"It figures," Sam said. "Why don't you put in automatics? They're getting all the business now."

"Sure, Sam, sure. And where do I get the dough? That's twenty." He took the coins Sam dropped on the bar and grinned. "At least you can afford beer."

"You know me, Jerry," Sam said. "My credit's good."

Jerry nodded. "Good enough." He punched the coins into the register. "Ginger was looking for you, by the way. What you got against the gal?"

"Against her? Nothin'. What do y'mean?" Sam pushed out his beer shell for a refill.

"She's got a hooker out for you —you know that, don't you?" Jerry was grinning.

Gaius Titus thought: *She's not very bright, but she might very well serve my purpose. She has other characteristics worth transmitting.*

"Hi, Sammy."

He turned to look at her. "Hi, Ginger," he said. "How's the gal?"

"Not bad, honey." But she didn't look it. She looked as though she'd been dragged through the mill. Her blonde hair was disarranged, her blouse was wrinkled, and, as usual, her teeth were discolored by the lipstick that had rubbed off on them.

"I love you, Sammy," she said softly.

"I love you, too," Sam said. He meant it.

Gaius Titus thought sourly: *But how many of her characteristics would I not want to transmit. Still, she'll do, I guess. She's a solid girl.*

"Sam," she said, interrupting the flow of his thoughts, "why don't you come around more often? I miss you."

"Look, Ginger baby," Sam said. "Remember, I've got a long haul to pull. If I marry you, you gotta understand that I don't get home often. I gotta drive a truck. You might not see me more than once or twice a week."

Titus rubbed his forehead. He wasn't quite sure, after all, that the girl was worthwhile. She had spunk, all right, but was she worthy of fostering a race of immortals?

He didn't get a chance to find out. "Married?" The blonde's voice sounded incredulous. "Who the devil wants to get married? You've got me on the wrong track, Sam. I don't want to get myself tied down."

"Sure, honey, sure," he said. "But I thought—"

Ginger stood up. "You think anything you please, Sam. Anything you please. But not marriage."

She stared at him hard for a moment, and walked off. Sam looked after her morosely.

Gaius Titus grinned behind the Sam Spielman mask. She wasn't the girl either. Two thousand years of life had taught him that women were unpredictable, and he wasn't altogether surprised at her reaction to his proposal.

But he was disturbed over this second failure of the evening nevertheless. Was his judgment that far off? Perhaps, he thought, he was losing the vital ability of personality-projection. He didn't like that idea.

For hours, Gaius Titus walked the streets of New York.

New York. Sure it was new. So was Old York, in England. Menenius had seen both of them grow from tiny villages to towns to cities to metropoli.

Metropoli. That was Greek. It had taken him twelve years to learn Greek. He hadn't rushed it.

Twelve years. And he still wasn't an adult. He could remember when the Emperor had seen the sign in the sky: *In hoc signo vinces*. And, at the age of four hundred and sixty-two, he'd still been too young to enter the service of the Empire.

Gaius Titus Menenius, Citizen of Rome. When he had been a child, he had thought Rome would last forever. But it hadn't; Rome had fallen. Egypt, which he had long thought of as an empire which would last forever, had gone even more quickly. It had died and putrified and sloughed off into the Great River which carries all life off into death.

Over the years and the centuries, races and peoples and nations had come and gone. And their passing had had no effect at all on Gaius Titus.

He was walking north. He turned left on Market Street, away from the Manhattan Bridge. Suddenly, he was tired of walking. He hailed a passing taxi.

He gave the cabby his address on Park Avenue and leaned back against the cushions to relax.

The first few centuries had been hard. He hadn't grown up, in the first place. By the time he was twenty, he had attained his full height—five feet nine. But he still looked like a seventeen-year-old.

And he had still looked that way nineteen hundred years later. It had been a long, hard drive to make enough money to live on during that time. Kids don't get well-paying jobs.

Actually, he'd lived a miserable hand-to-mouth existence for centuries. But the gradual collapse of the Christian ban on usury had opened the way for him to make some real money. Money makes more money, in a capitalistic system,

if you have patience. Titus had time on his side.

It wasn't until the free-enterprise system had evolved that he started to get anywhere. But a deposit of several hundred pounds in the proper firm back in 1735 had netted a little extra money. The British East India Company had brought his financial standing up a great deal, and judicious investments ever since left him comfortably fixed. He derived considerable amusement from the extraordinary effects compound interest exerted on a bank account a century old.

"Here you are, buddy," said the cab driver.

Gaius Titus climbed out and gave the driver a five note without asking for change.

Zeus, he thought. *I might as well make a night of it.*

He hadn't been really drunk since the stock market collapse back in 1929.

Leslie MacGregor pushed open the door of the San Marino Bar in Greenwich Village and walked to the customary table in the back corner. Three people were already there, and the conversation was going well. Leslie waved a hand and the two men waved back. The girl grinned and beckoned.

"Come on over, Les," she yelled across the noisy room. "Mack has just sold a story!" Her deep voice was clear and firm.

Mack, the heavy-set man next to

the wall, grinned self-consciously and picked up his beer.

Leslie strolled quietly over to the booth and sat down beside Corwyn, the odd man of the trio.

"Sold a story?" Leslie repeated archly.

Mack nodded. *"Chimerical Review,"* he said. "A little thing I called 'Pluck Up the Torch.' Not much, but it's a sale, you know."

"If one wants to prostitute one's art," said Corwyn.

Leslie frowned at him. "Don't be snide. After all, Mack has to pay his rent." Then he turned toward the girl. "Lorraine, could I talk to you a moment?"

She brushed the blonde hair back from the shoulders of her black turtleneck sweater and widened the grin on her face.

"Sure, Les," she said in her oddly deep, almost masculine voice. "What's all the big secret?"

No secret, thought Gaius Titus. What I want is simple enough.

For a long time, he had thought that near-immortality carried with it the curse of sterility. Now he knew it was simply a matter of time of growing up.

As he stood up to walk to the bar with Lorraine, he caught a glimpse of himself in the dusty mirror behind the bar. He didn't look much over twenty-five. But things had been changing in the past fifty years. He had never had a heavy beard before; he had not developed his husky baritone voice until a year before the outbreak of the First World War.

It had been difficult, at first, to hide his immortality. Changing names, changing residences, changing, changing, changing. Until he had found that he didn't have to change—not deep inside.

People don't recognize faces. Faces are essentially all alike. Two eyes, two ears, a nose, a mouth. What more is there to a face? Only the personality behind it.

A personality is something that is projected—something put on display for others to see. And Gaius Titus Menenius had found that two thousand years of experience had given him enough internal psychological reality to be able to project any personality he wanted to. All he needed was a change of dress and a change of personality to be a different person. His face changed subtly to fit the person who was wearing it; no one had ever caught on.

Lorraine sat down on the bar stool. "Beer," she said to the bartender. "What's the matter, Les? What's eating you?"

He studied her firm, strong features, her deep, mocking eyes. "Lorraine," he said softly, "will you marry me?"

She blinked. "Marry you? You? Marry?" She grinned again. "Who'd ever think it? A bourgeois conformist, like all the rest." Then she shook her head. "No, Les. Even if you're kidding, you ought to know better than that. What's the gag?"

"No gag," said Leslie, and Gaius

Titus fought his surprise and shock at his third failure. "I see your point," Leslie said. "Forget it. Give my best to everyone." He got up without drinking his beer and walked out the door.

Leslie stepped out into the street and started heading for the subway. Then Gaius Titus, withdrawing the mask, checked himself and hailed a cab.

He got into the cab and gave the driver his home address. He didn't see any reason for further pursuing his adventures that evening.

He was mystified. How could *three* personality-facets fail so completely? He had been handling these three girls well ever since he had met them, but tonight, going from one to the next, as soon as he made any serious ventures toward any of them the whole thing folded. Why?

"It's a lousy world," he told the driver, assuming for the moment the mask of Phil Carlson, cynical newsman. "Damn lousy." His voice was a biting rasp.

"What's wrong, buddy?"

"Had a fight with all three of my girls. It's a lousy world."

"I'll buy that," the driver said. The cab swung up into Park. "But look at it this way, pal: who needs them?"

For a moment the mask blurred and fell aside, and it was Gaius Titus, not Phil Carlson, who said, "That's exactly right! Who needs them?" He gave the driver a bill and got out of the cab.

Who needs them? It was a good question. There were plenty of girls. Why should he saddle himself with Sharon, or Ginger, or Lorraine? They all had their good qualities —Sharon's social grace, Ginger's vigor and drive, Lorraine's rugged intellectualism. They were all three good-looking girls, tall, attractive, well put together. But yet each one, he realized, lacked something that the others had. None of them was really *worthy* by herself, he thought, apologizing to himself for what another man might call conceit, or sour grapes.

None of them would really do. But if somehow, some way, he could manage to combine those three leggy girls, those three personalities into one body, *there* would be a girl—

He gasped.

He whirled and caught sight of the cab he had just vacated.

"Hey, cabby!" Titus called. "Come back here! Take me back to the San Marino!"

She wasn't there. As Leslie burst in, he caught sight of Corwyn, sitting alone and grinning twistedly over a beer.

"Where'd they go? Where's Lorraine?"

The little man lifted his shoulders and eyebrows in an elaborate shrug. "They left about a minute ago. No, it was closer to ten, wasn't it? They went in separate directions. They left me here."

"Thanks," Leslie said.

Scratch Number One, Titus

thought. He ran to the phone booth in the back, dialed Information, and demanded the number of the East End Bar. After some fumbling, the operator found it.

He dialed. The bartender's tired face appeared in the screen.

"Hello, Sam," the barkeep said. "What's doing?"

"Do me a favor, Jerry," Sam said. "Look around your place for Ginger."

"She ain't here, Sam," the bartender said. "Haven't seen her since you two blew out of here a while back." Jerry's eyes narrowed. "I ain't never seen you dressed up like that before, Sam, you know?"

Gaius Titus crouched down suddenly to get out of range of the screen. "I'm celebrating tonight, Jerry," he said, and broke the connection.

Ginger wasn't to be found either, eh? That left only Sharon. He couldn't call Kavanaugh's — they wouldn't give a caller any information about their patrons. Grabbing another taxi, he shot across town to Kavanaugh's.

Sharon wasn't there when Schuyler entered. She hadn't been in since the afternoon, a waiter informed him, after receiving a small gratuity. Schuyler had a drink and left. Gaius Titus returned to his apartment, tingling with an excitement he hadn't known for centuries.

He returned to Kavanaugh's the next night, and the next. Still no sign of her.

The following evening, though, when he entered the bar, she was sitting there, nursing an Old Fashioned. He slid onto the seat next to her. She looked up in surprise.

"Bill! Good to see you again."

"The same here," Gaius Titus said. "It's good to see you again—Ginger. Or is it Lorraine?"

She paled and put her hand to her mouth. Then, covering, she said, "What do you mean, Bill? Have you had too many drinks tonight?"

"Possibly," Titus said. "I stopped off in the San Marino before I came up. You weren't there, Lorraine. That deep voice is quite a trick, I have to admit. I had a drink with Mack and Corwyn. Then I went over to the East End, Ginger. You weren't there, either. So," he said, "there was only one place left to find you, Sharon."

She stared at him for a long moment. Finally she said, simply, "Who are you?"

"Leslie MacGregor," Titus said. "Also Sam Spielman. And W. M. Schuyler. Plus two or three other people. The name is Gaius Titus Menenius, at your service."

"I still don't understand—"

"Yes, you do," Titus said. "You are clever—but not clever enough. Your little game had me going for almost a month, you know? And it's not easy to fool a man my age."

"When did you find out?" the girl asked weakly.

"Monday night, when I saw all three of you within a couple of hours."

TO BE CONTINUED

"You're—"

"Yes. I'm like you," he said. "But I'll give you credit: I didn't see through it until I was on my way home. You were using my own camouflage technique against me, and I didn't spot it for what it was. What's your real name?"

"Mary Bradford," she said. "I was English, originally. Of fine Plantagenet stock. I'm really a Puritan at heart, you see." She was grinning slyly.

"Oh? Mayflower descendant?" Titus asked teasingly.

"No," Mary replied. "Not a descendant. A passenger. And I'll tell you—I was awfully happy to get out of England and over here to Plymouth Colony."

He toyed with her empty glass. "You didn't like England? Probably my fault. I was a minor functionary in King James' court in the early seventeenth century."

They giggled together over it. Titus stared at her, his pulse pounding harder and harder. She stared back. Her eyes were smiling.

"I didn't think there was another one," she said after a while. "It was so strange, never growing old. I was afraid they'd burn me as a witch. I had to keep changing, moving all the time. It wasn't a pleasant life. It's better lately—I enjoy these little poses. But I'm glad you caught on to me," she said. She reached out and took his hand. "I guess I would never have been smart enough to connect you and Leslie and Sam, the way you did Sharon and Ginger and Lorraine. You play the game too well for me."

"In two thousand years," Titus said, not caring if the waiter overheard him, "I never found another one like me. Believe me, Mary, I looked. I looked hard, and I've had plenty of time to search. And then to find you, hiding behind the faces of three girls I knew!"

He squeezed her hand. The next statement followed logically for him. "Now that we've found each other," he said softly, "we can have a child. A third immortal."

Her face showed radiant enthusiasm. "Wonderful!" she cried. "When can we get married?"

"How about tomor—" he started to say. Then a thought struck him.

"Mary?"

"What . . . Titus?"

"How old did you say you were? When were you born?" he asked.

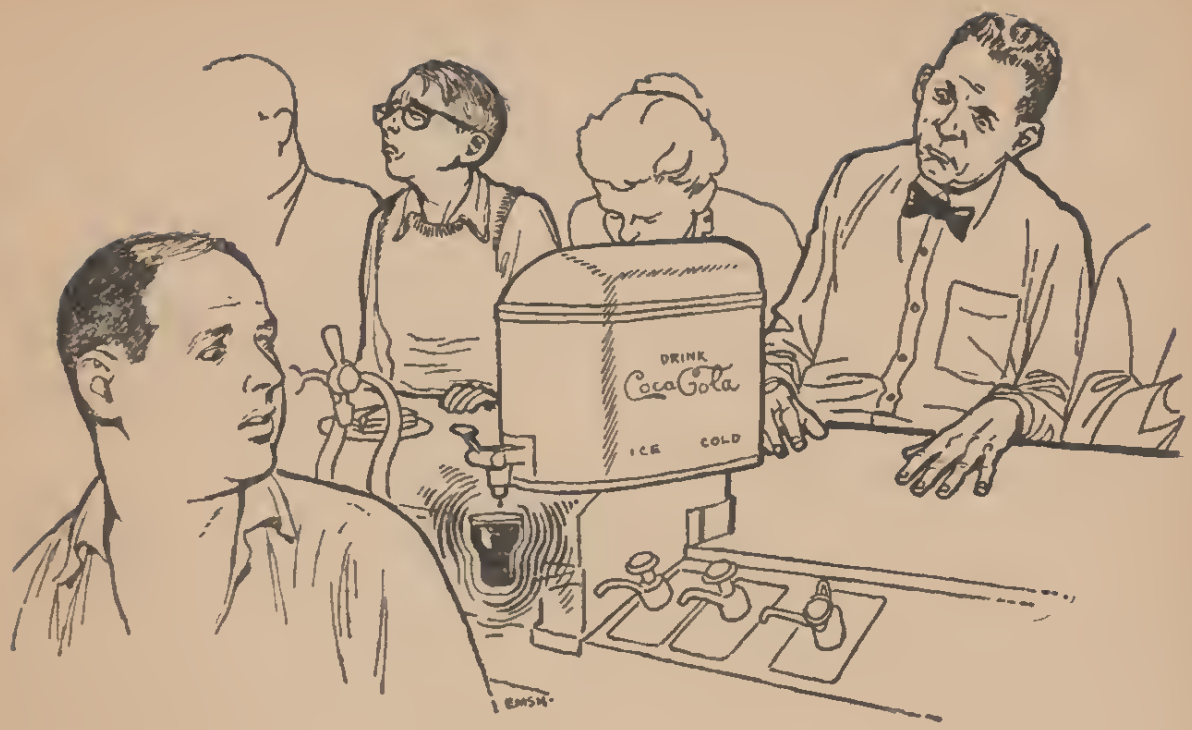
She thought for a moment. "1597," she said. "I'm nearly four hundred."

He nodded, dumb with growing frustration. Only four hundred? That meant—that meant she was now the equivalent of a three-year-old child!

"When can we get married?" she repeated.

"There's no hurry," Titus said dully, letting her hand drop. "We have eleven hundred years."

THE END



PSIOID CHARLEY

Charley, you may remember, was the lunch counter man who had a virus disease that "aspirin won't help." The consequences spread somewhat further, however . . .

BY JOHN A. SENTRY

Illustrated by Emsh

You know, I don't care how thoughtful your theory is, when it comes to a practical demonstration you always find a bug or two creeping in.

Take my case. My name's Charley Holloway, and I'm the sandwich half of this drugstore. I've been the sandwich half of the store for a couple of years, ever since I saved up enough money to buy in. And it looks like I'm going to be here for several years more, until I save up enough for a bigger place.

Sounds normal, sure. But I'm not. Couple of months ago, I found out I could make toast butter itself, if I wanted it bad enough. And move my wife Arlene's piano around the living room, no hands. Things like that.

Well, you'd think I could do something with that. In the country

of the blind, the one-eyed man is king, and so on. Why should I keep on scrubbing a counter-top and slicing American cheese for a living? Why don't I round up a bunch of people like me and start off a brave new world? If I don't want to do that, why don't I clean up this one? What's keeping me from it, besides the fact that I like my work and I like to think I'm a nice guy who doesn't want to bother anybody that doesn't bother back?

Look, can you see me, Charley Holloway, leading a crusade? Wiping out dragons left and right with lusty swings of my two-handed wet-mop, no doubt. But even if I wanted to, I couldn't.

The way I got this thing in the first place, I caught a cold. And right in the middle of it, boom, I started being able to throw things without touching them. Dr. Marten, who was the family doctor at the time, said something about a parapsychogenetive virus infection. He didn't believe it when he said it, but that'll have to do until some other doctor thinks of some other word.

After the cold was gone, Arlene and I sat around thinking of ways I could use what I had, but nothing good occurred to us. For one thing, if I didn't act normal, I was either going to wind up Exhibit A at Duke University or else in Bellevue for observation, and what kind of a living can you make there? So I went back to work until we *did* think of something. And it's lucky I did, because not only could we not think of anything, it turned out that doing anything else would have really been trouble.

You know what a rush-hour crowd is like at a sandwich counter. Maybe not from my side of the counter, but you've got a pretty fair idea. People crowding in, yelling for their stuff, people who always have just ten minutes for lunch because they want to spend the other fifty sitting out in the park reading the sports pages, people who want change for the telephone, and right in the middle of everything, the take-out orders. Fifteen containers; five coffee regular, three coffee sugar no cream, four coffee cream no sugar, one coffee black all the way, one tea milk, one tea lemon, with the sugar on the side, huh? And make it snappy—I still got to get to the delicatessen for a couple of quarts of beer.

Well, in the middle of one of those things it's every customer for himself and me alone against all of them. I run up and down the counter, throwing things together, and I say hello to the regulars because the sight of their faces cues off an automatic response in my head, but I don't really *look* at anybody and nobody ever looks at anybody else. Like anybody else in this business, I've got a kind of sponge in my brain. It soaks up orders as I hear 'em and forgets 'em as I fill 'em, but it's all automatic and it's all done at break-neck speed. Maybe if a Martian came in and sat down, waved his tentacles and ordered in High

Canalian, I'd notice, but I'll bet you most of the customers wouldn't.

So it was a long time before I noticed that there had to be one customer who always filled his own order.

The way you'd notice a thing like that is something like this:

That sponge in your head fills itself up with orders and empties itself out as they're taken care of, and the rest of your brain doesn't even know, most of the time, just exactly what those orders were or how many. But you do notice when one of them hasn't been filled. You look up and down the counter for somebody who looks like he's been waiting longer than he should, and you look at the sandwich board and the grill to see if you've maybe left something working. And even if you don't spot anything, you know there's one order kicking around in that sponge, and it's been there too long.

So you stop and dig around in your head until you see what it was.

This started happening, regular as clockwork, every day, about three weeks after I got back from being sick. One order would always still be unfilled. It was always a ham and swiss on rye, mayo, no lettuce, and a large coke. I never filled it, but there'd never be a customer to go with it when I stopped and thought about it.

Now, I *knew* I hadn't filled that order—not in any way. Like I said earlier, I can let the toast butter itself, sometimes, when nobody's looking, but that's as far as I go. How long would I have any customers if milkshakes started pouring themselves and hamburgers danced on and off the griddle?

On the other hand, if I had a customer who came in, ordered, didn't get it fast enough, and left without waiting for it, why did he come back every day, instead of going on down the street to that greasy spoon you're welcome to if you've got to have indigestion with your lunch?

So what it boiled down to was that I had a satisfied, steady customer I never waited on. What's more, there was never a dirty plate and Coke glass anywhere on the counter. He was washing his own dishes. And he had to be punching his own check.

Naturally, with him doing all his own work, I couldn't expect to find a tip.

So I went over and talked to Doc, who handles the cash register for both of us.

"Say, Doc," I asked him, "you happen to notice one particular customer, has a fifty-five cent check every day, sometime around twelve-twenty, maybe?"

Doc scratched his chin and looked off into the distance across the counter full of light bulbs and rubber gloves.

"Maybe, Charley. Maybe. Man or girl?"

I shook my head. "Don't know."

"Must be a man, then," Doc said, giving me the kind of wink only an old druggist can give you. He drum-

med his fingers on his counter. "No, by golly, it's *not* a man!" he came out with. "It's a young kid—about high school size, I'd say. Thin young fellow, with heavy glasses and no color in his face. Ought to try taking a couple of B-1 every day. Never talks—just puts the check down with the money. Always has the right change. Puts it down and walks out fast."

"Uh-huh. Look, Doc, do me a favor tomorrow? When he pays you, try and start a conversation with him. Find out where he works, or anything like that. And give me a yell—something like do I want any more containers up from the cellar today. I'd like to get a look at this guy, in case I miss him at the counter."

Doc nodded. "O.K. But what's up? You think something funny's going on?"

I shook my head fast. "No. Just curious."

"O.K.," Doc said. He's a pretty smart old apple. He knows there are some things it's best to take at face value. He'd be watching pretty closely from now on, but he wouldn't be minding my business for me.

So I went back to the counter and washed some dishes, figuring that tomorrow I'd get to the bottom of all this.

I was right, but I was wrong, and here's why, if I'd only thought about it:

In the first place, this all happened only three weeks after I had my cold, or whatever it was. In the second place, most human relations are a kind of a contest. Take lunch counters, for example. The customer wants his food. But there's more than one customer, so each one's got to wait his turn, theoretically. But some people *don't* have as much time as others, and some people are hungrier than others. So, if they can, they try to get their stuff ahead of the guy who was maybe there first, but isn't as much of an urgent case.

Now, I want my customers. I want them happy with me. So I have to juggle around between 'em, keeping everybody happy. I can't do it right by simply taking them in turn. I try to do four or five things at once, and, being a trained counterman, I can generally do it. Or suppose a customer wants ham salad and I don't have any. I try to convince him chicken is just as good.

It's a kind of contest—it's certainly complex. The way I see it, it's the same way the world works on everything else. Everybody has to give a little, take a little, and sometimes settle for something else than what they started out wanting. And because everybody's pretty much alike when it comes to being able to get things, it comes out fairly even all around.

Aha! Except for this kind with the ham and swiss, no lettuce. I should have seen what that was leading up to, but I didn't.

The next day, I kept my eyes open during rush hour. It slowed me down, doing everything consciously instead of automatically, but I was

pretty curious. Besides, it was a Tuesday, and Tuesdays, for some reason only a crowd psychologist could explain, are slow days in my end of Manhattan. Out on Long Island, it's Mondays. In the Bronx, it's Thursdays. You explain it, if you're a psychologist.

So it wasn't too bad. Everything happened a little more slowly, but I kept everybody happy.

"Uh—a ham on rye with swiss cheese, please. No lettuce, please. Just a little mayonnaise. And . . . uh . . . a large Coke."

It was the kid, all right. He was sitting on the edge of his stool, and he looked nervous.

"Right," I told him, and went up to the other end of the counter to mix up some shakes. I wasn't going to serve him. No, sir—I wanted to see what he'd do about it.

I kept the corner of one eye on him in the backbar mirror, and I made sure I was busy up where I was.

Pretty soon, he was looking at his watch, and little beads of anxious sweat started showing up under his nose. He fidgeted around for a couple of minutes, throwing pleading looks in my direction. I pretended not to see them.

In another minute, he stopped hoping for anything from me and began looking at the other customers, rolling his eyes sideways behind those thick glasses, and pretending to look somewhere else if he happened to catch somebody's eye. He looked at his watch again, and he really began looking desperate. Then he took a deep breath, gulped, and closed his eyes. He wrinkled his face up and bore down like a man trying to open a stuck drawer.

I saw a couple of slices of rye slide out of the bread drawer and slip up on top of the sandwich board. The spreader cluncked into the mayo jar, teetered back out, and slapped itself real quick across the bread, one-two, like a guy snatching apples off a fruit stand. And a Coke glass just moved itself under the spigot on the machine.

Right then, like it always happens, somebody else wanted a Coke. It was Henry Atwiller, the clerk in the shoestore down the street. Steady customer. Never missed a lunch, except a couple of days the week before, when he was out sick. And he wanted a Coke.

Two objects cannot occupy the same space at the same time. I nodded to him. "Minute, Henry," and moved over to the Coke machine as quickly as I could, trying to cover for the glass that was filling itself.

But Henry was in a rush, like he always is. Henry is one of the guys who wants to get through fast so he can stand on the corner and watch the pretty girls walk by.

"Hurry it up, Charley!" he said in a peeved voice.

For a large Coke, you've got to cycle the machine twice, or you only get a small Coke's worth of syrup in the glass. I shot a quick look over at the kid, but he had his eyes closed. The ostrich reaction. He wanted his

food, I wasn't giving it to him, and he was hoping nobody'd notice how he was getting it. The sandwich was already in front of him, on a plate.

Henry wasn't waiting any longer. He was always quick on the trigger. All of a sudden, that Coke began to move toward him.

Now, Henry's not a mean guy. He just wanted a Coke, and he didn't have any idea it belonged to somebody else. He just grabbed for it. No hands.

And the kid grabbed back. And I tried to hold the glass steady under the spigot.

All of a sudden, that Coke was trying to go in three directions, and all of a sudden there was Coke all over the place, spraying out of the glass and splashing all over everything.

I stood there with my mouth open, swiveling my head back and forth to look at Henry and the kid.

The kid's eyes snapped wide open. He took one look at Henry and one look at me, turned white as a sheet, and let out a strangled kind of yell. He jumped off the stool and made a dash for the door. Henry was mopping off the front of his suit with a dazed look in his eye, and looking at me at the same time, trying to find out if I had figured out what had happened.

And just before he got to the door, the kid stopped as if he'd run into a wall. His pants fluttered, and one pocket popped out. Two quarters and a nickel flew through the air, back toward the drug counter.

Doc's job was collecting money for both of us. He wasn't going to let the kid stiff us. He'd placed a legitimate order.

The kid's pocket straightened itself back out, and he sobbed under his breath and began running again. I feel kind of sorry for him. Adolescent kids have enough problems. Skinny adolescent kids with thick glasses have even more, and skinny adolescent kids with thick glasses who think they've gone fantastically crazy have the most problems in the world. I wish I could find him.

But I was looking at Doc in the meantime, and Doc was grinning at me in a funny, crooked kind of a way and ringing up fifty-five cents under the B code on the register.

Henry muttered something, slapped the price of his meal and a tip down on the counter, and got out of the store in a hurry, going in the opposite direction from the one the kid had taken.

The other customers were pretty bewildered by it all, but they calmed down in a couple of minutes. Maybe one or two of them calmed down a little quicker than you'd expect, as a matter of fact. The steady customers, that was—and I remembered missing each of them for a couple of days during the last two weeks.

Come to think of it, Doc had been out, too.

So that's the answer. You heard of Typhoid Mary? Well, here I am, a food handler.

And I guess it doesn't take much brains to figure out, like I had, that

there're times when it doesn't pay to advertise.

So there's your theory about what people like us should do, shot to pieces. Suppose I'd decided to become the dictator of the world?

H. G. Wells once wrote a story about a one-eyed man who wasn't king in the country of the blind. Old H. G. kind of shuffled the cards to suit himself, I've always felt, but he was basically right in being suspicious of that proverb.

The one-eyed man in the country of the blind is not going to be king if the one-eyed man is a specialist in diseases of the eyes. Not if he cures everybody.

Life's pretty quiet, here in the store. Doc sells light bulbs and rubber gloves, and if prescriptions get mixed kind of fast, in the back room where nobody can see him, that's nobody's business but his.

The sandwich half of the store has a nice, steady crowd. Tips dropped off for a while, what with so many people doing their own work, but they came back up again, after they realized I was better at mixing ingredients and controlling heat under hamburgers than they were. Even Henry Atwiller's back. He's married, now—one of those girls he used to watch walking by was one of my customers, too, and they met in a slight hassle over who was going to have the last cruller in the tray. It divided in half.

There's something else I'm darned grateful about. You know how it is, being married? Every once in a while the wife wants something or wants something done that you figure is just plain unreasonable. You can't reason with her—women aren't much for logic, I've noticed. So you just have to put your foot down, or try to.

Well, after I found out I could do things, every once in a while I'd feel the temptation to *really* make it stick, when I was trying to make her see it my way. I never did, though—figured it wouldn't be fair, or something. I don't know.

But I'm awful glad I didn't.

Arlene's a pretty quiet gal. Never complains, always has her feet on the ground. Never uses three pounds pressure where two will do.

You know how a wife likes to keep a few secrets from her husband? Makes her feel good. Well, she'd had this cold, right after I did . . .

ACADEMY FOR PIONEERS

Some things are a little bit difficult to teach; it may be because the teaching process is itself so dangerous, or it may be because the thing to learn is inherently not-what-I-teach!

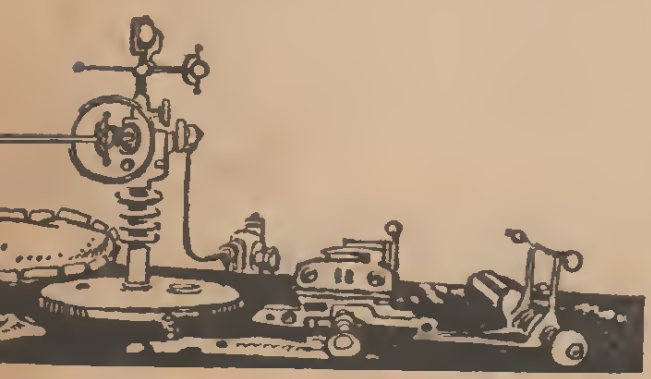
BY RAYMOND F. JONES

Illustrated by Emsh

The heavy, swirling atmosphere pressed against the windows of the exploration shack like a perpetual yellowish-green night. Cadet Leader Stan Thornton looked out, seeing nothing, his mind gripping tightly, almost frantically, the single thought that another couple of days at the most would see the end of this. They'd be going back up to the sunshine that existed—he hoped it still did!—a couple of miles above them.

Once out of this chasm and back on the broad plateau which was split by it he'd have the deal cinched. His personal field problem would be in the bag, and he'd be well on the way to wearing the little silver rocket of the TEC man. But this hell world at the bottom of the chasm where they'd come to study the Muddies got on a man's nerves. Thornton had the almost overpowering sensation that everything was about to fall apart. There were so many things that *could* go wrong, and the whole problem go to pot, even now.

He glanced at the big chronometer dial on the wall. Ardman, the instructor, and Cadets Mark Wentworth and Paul Ennis had gone out three hours ago on a short information trip to the Muddies' village. They were way overdue now. It had been according to Handbook Procedure to send them, but if anything had gone wrong—



Thornton felt a faint chill of apprehension and turned from the window. Maybe he and Cook ought to go out looking for them. Or was it Cook he should send alone? He wasn't quite sure what the Handbook said on that. He'd have to look it up—

He wondered what Cook was doing in the other end of the shack anyway. Something new to louse up the field problem, without any doubt. But Thornton didn't want to know right now. He had worries enough.

Why it should have been his bad luck to draw Ren Cook, the Mars-boy, in his group—well, it was more than a man deserved. But Cook would be handling the group as Cadet Leader himself in a short time. There would be a chance to repay just a little of the fouled-up detail.

There was a sudden vigorous slapping on the outer lock door and Thornton whirled expectantly. Then his enthusiasm died. That was a Muddy knock. He didn't want any truck with them now. He wanted Ardman and the other two cadets back. Another ten minutes would rate a point against him.

He switched on the communicator connecting to the exterior of the hut. He listened a moment to the unintelligible response, then irritably

cut in the semantic transfer circuits he'd forgotten. The Muddy's squashy speech became semi-intelligible. Thornton listened with a frown. After a moment, horror crept over his face.

"There must be some mistake," he said in sick disbelief. "There has been no disturbance of the *quamora* by our men."

"We saw," the Muddy said decisively. "You return *quamora* or go to rest in its place."

Thornton's spine chilled. The crazy beasts could be holding Ardman's party! That was it! And there was only one cadet who could be responsible for all this—

"I'll check," he said wearily. "I promise restitution if we have violated the *quamora.*"

He walked uneasily down the narrow corridor to the small workroom at the rear of the shack. This served as field laboratory and shop for the assembly and examination of specimens, and for maintenance of equipment.

Ren Cook was bending over a table. His body hid the object of his attention. Thornton hesitated in the doorway. It was easy to complain about the Martian colonist's actions behind his back. It was not so easy to do it to his face.

In the first place he was substantially older than any of the rest of them. Except Instructor Ardman, of course. And he was physically big, as if the severe life on Mars had already changed the features of the third and fourth generation Earthmen who fought the planet for existence.

Ren's body and expression carried the marks of that fight. He was hard and bronze, beyond all natural coloring of Earth's sun. He seldom smiled, and when he did there was a faintly sardonic quality as if he had experienced things which made the concerns of the other cadets quite trivial. They didn't like his smile.

Since he first arrived at the Academy Yard almost a year ago he had failed to fit the routine. He had been gauche and almost clumsy in ordinary social contacts, but that had been corrected for the most part. What mattered now was his inability to understand TEC ways, his constant and increasing belittling of Standard Methods and Procedures.

It was impossible to think of him as a TEC agent. He had too many strikes already to ever make it. And it was also impossible for him not to know this. Yet he stayed on, his negative, unpleasant attitude filtering like muddy water through the efforts of the others to get through the work and receive their silver rockets.

At the Academy his classwork hadn't been quite bad enough to earn his dismissal, but it was common knowledge that he'd never make it when time came for his own field problem. That required co-operation—and co-operation was something Ren Cook wasn't going to get from those whose field problems he'd obstructed and interfered with.

He'd cost points of every man he'd been with so far. When Ren Cook took his turn as Cadet Leader there'd be a big payoff.

He moved to the end of the table. Thornton caught sight of the objects he'd been working on. The Cadet Leader's worst fears were confirmed. A lump of sick panic burst inside him. All his normal timidity in the presence of Ren Cook vanished.

Cook was carefully breaking away white chunks from core material which was instantly recognizable. Thornton rushed forward and jerked him around by the arm.

"You've been digging fossils!" he cried. "And the Muddies saw you! And now they're at the door screaming for blood—"

Ren glanced down with a slow smile. "Take it easy," he said. "I'm sorry they found out, but I guess it couldn't be helped. Anyway, they don't want anybody's blood. They just want the bones replaced where I found them. I'm about ready. Help me peel off a couple more of these casts, will you? Then we'll go back and bury the things again."

Thornton swept his hand across the table and flung the casts to the floor. "You'll take them back now!" he exclaimed. "The first day we came here we derived a Type C-18 taboo pattern for the Muddies. You know the meaning of that as well as the rest of us do! Now you try to louse up my whole field problem by sneaking fossils in here—"

"What's up now? Can't a guy get any sack time at all around this place?"

Thornton turned, and Ren Cook glanced up as the fifth cadet of the group emerged with sleepy irritation from the bunk section of the shack. It was Val Grigsby, the young interplanetary sportsman-racer.

Thornton sagged against a small worktable attached to the wall. "I'm in a jam," he said with an almost helpless pleading in his voice. "This crazy fool has been digging fossils in direct violation of the C-18 taboo. And the Muddies have found it out. That's worth eleven points! It *could* be enough to throw my rating on the whole problem below the line." Panic bleached his face.

"Now, wait a minute!" Ren Cook exclaimed. "I didn't dig up these fossils just to louse up your problem. If you'll give me a hand here, we can get them back where the Muddies want them, and there'll be no harm done. I made sure of that before I ever went digging. I hoped to get the casts made without the Muddies' knowledge, but it doesn't matter."

"My eleven points don't matter, I suppose," Thornton snarled. "Not to you, anyway—"

"Listen, Ardman isn't going to knock you down any eleven points when he finds out what we can learn from these specimens. Isn't your basic problem to find out everything possible about the Muddies and evaluate them from the standpoint of future contacts? All right,

one of the things we need most is a tracing of their evolutionary development. We need to know whether they started from scratch down here in these chasms or if they branched from some extinct species that once inhabited the plateau. The answers are here in these bones—if we can get enough of them to run a consistent time sequence. I'm doing you a favor! Ardman ought to raise you eleven points for this. Now, how about a hand?"

Val Grigsby stepped forward, his face grim. "You're not doing anybody a favor. It's eleven points off Thornton's kitty. You haven't been in TEC Academy for almost a year without knowing that."

Ren's expression changed. "All right, suppose I do know it? It's time we found out if it can't be otherwise. What's more important—finding some genuine, useful information about this site, or sitting on our hands and racking up score points? It's time we confronted Ardman with some real data—even if getting it does put a slight crack in a Handbook Procedure — and found out if it isn't worth a pat on the back instead of a black mark in the little book."

"You just can't be that dumb—" Val said. "And if you are, you've got no business with TEC in the first place. But you don't have to take the gig for this. Thornton does —unless we can find him a way out. Maybe you had that figured, too—"

"We can't argue all day," Thornton said desperately. "The Muddies may be holding Ardman and the others. We've got to move!"

"We don't know they are," said Val. "Send Cook with the Muddies to replace their precious bones. If Ardman shows up while he's gone, we'll say you sent him to look for the party. That way, nobody will ever know anything about this—unless, of course, the Muddies really are holding them."

"I'll stow the costs in my duffel," Ren offered. "They're important."

Val's arm shot out to check Ren's move. "Never mind, we'll take care of them while you're gone."

Ren looked at the stack of white castings for a long moment. "It would be worth a try," he said in a final challenge.

"Not on my eleven points!" Thornton cried. "Get going! That's an order from your Cadet Leader, Cook!"

Moving slowly through the muck that formed the floor of the chasm, Ren Cook stayed ahead of the Muddies, leading the way to the spot where he had dug the fossils from the cavern wall. Actually, there were only two of the native creatures who had come to challenge his activity, and their offensive means was hardly anything to worry the spaceman.

But Ren knew the Muddies had no more desire for a fight than the Earthmen did. They were unhappy that the bones of their remote kind had been disturbed, for they attached great religious awe to any fragmen-

tary reminder of their own lives. Replacement of the bones, however, would satisfy their offended reverence.

This was a minor calculated risk, the kind you had to take in extraterrestrial exploration if you were ever going to find out anything useful about the site. But the Handbook Procedures of the Terran Exploratory Corps denied the right to take any such risks. In cold black and white, they defined the Muddies' attitude as a Type C-18 taboo and forbade all Corpsmen to break it.

It baffled Ren Cook. It had baffled him increasingly during the whole time since he first set foot on the fabled Academy Yard back on Earth. He'd been willing to give TEC the benefit of the doubt at first, crediting his misunderstanding to the fact that he was from Mars and out of touch with the way people looked at things back home. But that was no longer sufficient.

Everything you did as TEC man was pre-defined. The procedure was cut and dried. On a new site, an exploring party sent a Trojan Horse into the midst of any intelligent group for a preliminary survey. The Trojan Horse was one of a number of mechanical devices which could observe and listen and transmit the data back to the scout ship or contain it for later examination. This data gave the party the language, an estimate of the basic mores and taboos, which were then classified according to TEC standards, and actual contact was made and conducted accordingly. And the system didn't work—

The case of the Muddies was a minor example of the inadequacy of such procedure. The problem of their origin was an intricate and fascinating one—whether they'd come down from the oxygen atmosphere of the plateau or developed in the heavy, chlorine based air of the chasms. Only a paleontological analysis would answer the question. That required infraction of Standard Procedure. To Ren, it was insane that strict observance of the rules should be allowed to stand in the way of this knowledge.

This was only one small instance, of course. They could live without knowing the Muddies' origins. But what of such cases multiplied by ten thousand, a hundred thousand? What value was there in the work of the great, vaunted TEC if it proceeded everywhere with such hamstringing self-regulation?

Ren didn't know the answer to that one. He didn't know the answer to anything, any more, he thought. But some answers were damned soon going to be forthcoming—if he didn't get kicked out of the Academy too soon. He put too much of his life into his ambition to be a TEC man to give up without knowing why all he'd dreamed of seemed to have turned out a sham and a fake.

The Muddies stomped patiently behind, their splayfooted steps less clumsy than his own. A grayish, leathery hide covered them. Blood-

red saucer eyes enabled them to see in the gloom that made infrared optical systems necessary in the Earthmen's helmets.

Ren kept his silence as they moved along, sensing that this was building up a pressure within the Muddies themselves. They expected him to be apologetic, and were prepared to counter it.

Near the site of his first find, one of them finally spoke. "It was a bad thing to remove the *quamora.* We have done you no harm."

Ren was certain now that he knew the pair. It was difficult to tell one Muddy from another, but he'd made a point of having all possible contact with them during the past six weeks .He made no answer. He meticulously restored a bone to a pocket in the ledge from which he had taken it and cemented it down with mud. He moved on to another.

It had been too much, of course, to hope that he was unspotted during the time of his excavations. The Muddies apparently could see for miles through the murk. He suspected them of seeing around or through rocky projections in the chasm. At any rate, they outdistanced his mechanical sight aids by several times.

At each point of restoring a bone, the pair of Muddies tried to heap remorse upon him. Tentatively, at first, they were both spouting a stream of invective designed to make him feel ashamed of himself by the time he was through.

He straightened after tamping the last bone in place and regarded them with a sorrow they couldn't see but which he tried to project in his voice.

"I've done a mean and despicable thing," he said. "I do not deserve the hospitality and the friendship the Muddies have offered the men of Earth. Perhaps it would be fitting now that myself should be forfeit for the betrayal I have done."

That stopped them. He almost felt the consternation in their minds. They hadn't expected anything like this.

"What is it you desire to do with me?" he said finally as their hesitation continued.

"You have restored the *quamora,"* one of them said haltingly. "There is nothing more we desire."

"I insist," Ren said. "Some payment should be made. I have trespassed on sacred ground. I have to give restitution."

"There is nothing more," the Muddy grumbled.

Then, as if with sudden inspiration, Ren pointed upwards through the murk along the chasm wall. "There is something I can offer that you cannot refuse!" he said. "I have spoken of the great land that exists beyond the Wall of the World, which your people have died trying to reach from time to time."

At the beginning of their contact the Muddies had told stories about their own explorers who tried to scale the walls and died in agony as they came out of their native atmosphere.

"I can take you there and you may see for yourselves what kind of a world lies beyond. In suits such as this one I am wearing you will be safe while away from your own land. This is what I will give you to repay for desecration of the *quamora*."

He could almost feel the reacting turmoil of their minds. His offer raised the lid on the cesspool of all their basic racial fears, fears which taught that death and destruction, and all hell and evil lay in the clear atmosphere and light of the domain beyond the chasm. But it touched, too, the thick fiber of courage and curiosity with which the species was blessed. It remained only to see which was stronger in the two specimens before him.

The question was answered almost immediately. After their initial shock of surprise and fear one of the Muddies spoke rapidly. "We will permit you to repay, Earthman. To die in such an adventure would be our supreme privilege."

Ren Cook grinned to himself. "You won't have to die, but you'll have stories enough to tell the home folks for the rest of your lives!"

He felt a satisfying sense of accomplishment as he returned to the shack. He had hoped for an opportunity to make such an offer to the Muddies, but he hadn't been at all sure they would accept. He wondered exactly how Thornton—and the others, too—would react to the news of what he'd been able to accomplish.

It would be a real coup to actually take a pair of Muddies back aboard the scout ship and make a thorough study of their reaction to the experience. The closer physiological examination possible aboard the scout would be priceless to the study of this site.

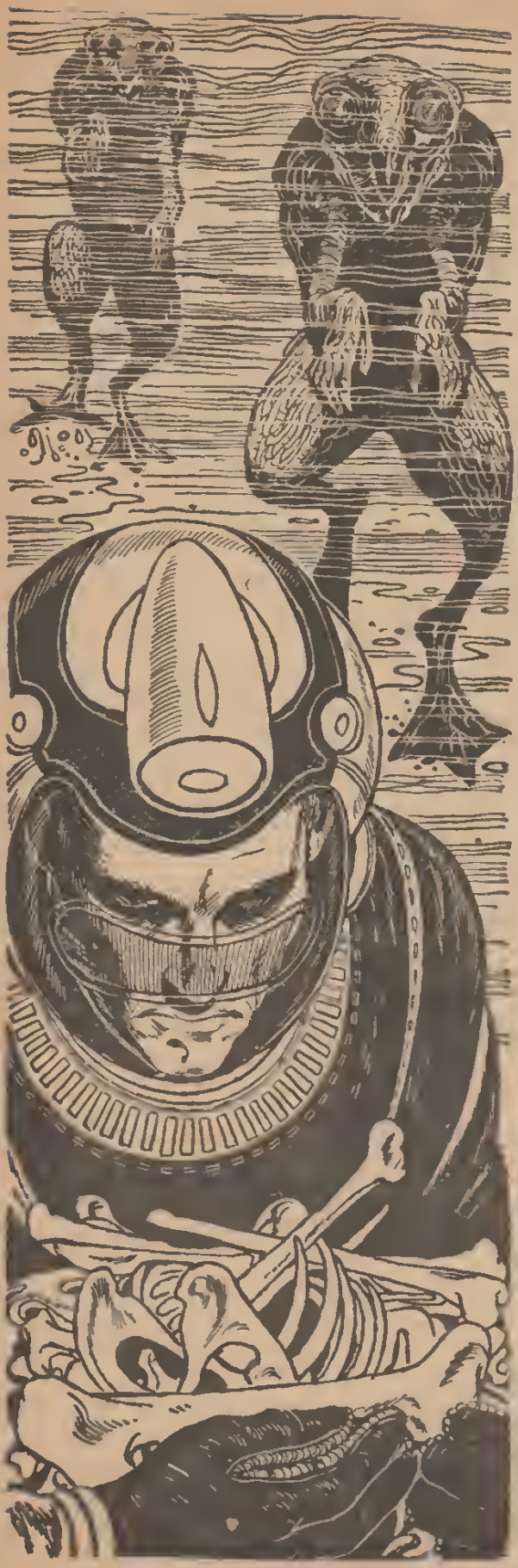
Provided anyone cared half as much about the study as they did about accumulating points! Ren thought bitterly.

When he reached the shack he saw through the ports that Ardman had returned. And on the table in the center of the room was the pile of fossil castings. The party had evidently returned before Thornton and Cal could dispose of the things.

Ren entered the lock and shucked his atmosphere suit. He stepped through into the main room. The others had been warned of his coming by the occupancy signal on the lock, and they waited for him in a solid line of offense.

Ardman's eyes glared with disapproval, but Thornton was still Cadet Leader and he spoke first, in a voice that was almost hysterical, "Eleven points you cost me, Cook! Eleven points for your insubordinating excavation of Muddy fossils. But I'm getting authority to issue an equal penalty for you. The same number of points will be subtracted from your field problem before you even begin!"

Ren nodded as if that information was taken for granted. He said, "I wish to report, Cadet Thornton, that replacement of the fossils has been



completed, and the Muddies have been satisfied."

"That hardly diminishes the magnitude of your offense," said Ardman coldly. "I am told you acted in full awareness that you were breaking Standard Procedures."

"Yes, sir. But in order to gain the additional information, which is quite necessary to our understanding of the Muddies, I thought—"

"You had no right to such thinking. Cadet Thornton is presently the Leader of the group, and is the one who gives orders concerning what attack shall be made on the problem and what shall not. Your turn is coming. But in this case Cadet Thornton was not ignorant of the C-18 taboo, even if you were."

"Yes, sir," Ren answered. "There is one additional factor which will interest you now. To appease the Muddies I found it necessary to promise them that two of them could accompany us to the plateau and return. It will be an invaluable opportunity to study—"

Thornton had turned a shade toward green. He seemed to be struggling with his vocal equipment. Finally, he grabbed a thick volume from the nearby shelf, opened it to a well worn page, and spun it across the table to Ren.

"Five points!" he exclaimed. "Type G life forms are *not,* under any circumstances, to be removed from their native habitat. You knew it, Cook! You knew it as well as I did! Five points—!"

That night, lying without sleep in his bunk, Ren considered the events of the day. They had been about as satisfactory as was possible. Provided completely unwanted results could be called satisfactory. Things had gone almost exactly as he'd anticipated. The reaction of his fellow cadets was as predicted down to the umptieth decimal.

It would have been wonderful to have found a variation, proving him wrong. But Thornton spoke his words as faithfully as if reading out of a script: "Eleven points you cost me, Cook! Type G life are not . . . to be removed from their native habitat—Five points!"

Points first—and if you accidentally get some usable information that's fine, too, provided no rules are broken. That was Thornton. That was Ardman's entire group.

That was TEC.

Why?

Since the first needle-cold suspicions attacked him almost a year ago he had been asking himself that question. The answer was less and less apparent as time went on.

After six months he knew he'd never make it. He knew he wanted nothing of TEC or what it had to offer. But there was one thing essential before he parted company with TEC forever. He had to know *why*.

It wouldn't be too hard. To test a structure you apply a stress and find its breaking point. The more rigid and inflexible the structure—like TEC—the less stress it takes.

That had been his belief. And it was proving correct. One by one, he'd deliberately broken the inflexible Procedures during the field problems of his fellow cadets. Thornton was cracking. The rest were upset.

But one man's defection and panic wouldn't prove anything. The collapse of an entire group would. It would show how men break when chained to the rigidity of a structure like TEC. It would show how limited and faulty were the methods and theories upon which TEC was based.

The rest saw it—or at least felt it—as clearly as he did. That's why his casual attitude toward the Procedures was like a sprinkle of salt on raw wounds. They knew the Procedures were faulty—and had committed themselves to observing them implicitly in order to become wearers of the silver rocket of the TEC man. Their longing for that symbol was so intense that his violations were conducive to psychosis—if he carried them far enough.

And he had done just about that, he thought. He'd have to ease off and be a good cadet during the next problem, which was Val Grigsby's. But the following one was his own. Ren Cook, Mars-boy, was going to lead the group on a field problem—and it would be his last chance to find an answer to his question.

Regardless of the cost, then, he was going to have that answer. He only hoped Val would not be one to crack seriously, but somebody was going to have to, to tell him what he had to know!

To tell him why TEC, as the public thought of it—as he had dreamed of it—was a myth that did not exist.

Ren couldn't remember a time when he didn't have the dream of becoming a TEC man. He'd wondered at times almost if it were possible to have been born with it.

Out on Mars even the hardened colonists spoke of the Corpsmen with deference, and elsewhere they were regarded with veneration wherever they went. Timeless legends had begun to spread across the starways concerning their exploits. And Ren Cook had listened with wide eyes to all those legends as a boy on the cold deserts of Mars.

And now—this! He thought of Cadet Leader Thornton and rolled over in his bunk, stifling the nausea within him.

He forced his eyes shut and remembered back to his fifteenth summer, Earth-time. That was the year he spent most of his daylight hours at the port, watching the infrequent ships come and go. He would not have told a living soul then, but the thing he waited for was the thing that actually happened. He knew that someday out of the sky would come one of the fabulous Free Agents of the Corps. All his life he had heard the stories of their great adventures. But he had never seen one of them.

That Mars summer was almost the end of his time of believing in miracles and wishes-come-true, but he held on, one day at a time. And then suddenly he never had any need to believe again. Not after seeing the dark, space-pocked ship settling slowly into the hard, burned pits of the field.

He saw the silver rocket symbol with the dark eagle wings on the breast of the man that came out of the ship. The mark of the Free Agent. He waited at the end of the ramp beside the startled port attendants as the great Jerom Hyle came down from the ship.

This was more than a miracle, for Jerom Hyle was a Mars-man, himself. One of the few who had ever gone out from the colonies to be admitted to TEC.

Ren wormed his way toward the great man. "I'm Ren Cook," he said. "I'm going to be a TEC man some day. A Free Agent like you. I'm going to go to every planet in the whole galaxy, every galaxy in the whole Universe. Can you tell me how to join the TEC?"

He remembered Jerom Hyle had stopped, putting a thinly gloved hand on the boy's shoulders while he looked into his eyes. "I think perhaps you will," he said slowly. "If anyone here could do it, I think you could. Come down tomorrow and we'll go through my ship."

There had been almost half a day spent in the fabulous ship, stories of exploration and pioneering on scores of planets in as many different galaxies. And after that, Ren knew he'd been right. There was only one

thing for him in life, and without it he might as well be dead.

The Terran Exploratory Corps had a history only a little more than three quarters of a century old, but in that time it had established substantial bridgeheads on more than three thousand worlds, where opportunity for colonization, expansion, and commercial exploitation was unlimited. They had given Earth its boundless frontier.

There had been difficulty for a long time in getting the work of the Corps organized. It was tried on a strictly military basis in the beginning, but this was not the answer. After a couple of decades of trying, military men were the first to admit they were not the ones to explore, pioneer, and open new frontiers. These things were not the kind of enemy whose subjection brought any satisfaction to their profession.

Pioneers were obviously the kind of men required. Men who could pick up a crew and set sail in a tiny carack for worlds unknown. Men who could gather their friends and hitch up the big Conestogas when it became too crowded where they were.

But in this day of interstellar flight no man could do that. Oh, one or two managed to get private financial backing for a few flights in rickety ships that were soon lost. For really adequate means to carry on this kind of pioneering, however, a lifetime of effort would be insufficient.

It was obvious that some separate and distinct public institution must be set up for the purpose of space exploration and pioneering work. Something resembling a military organization, yet distinct from it in ideals and traditions. A program of ample subsidy for these modern pioneers. And, finally, a means for selecting and training them.

The Academy was organized to perform this last function. It could not be left to random chance for pioneers to appear and set their own courses as in olden times. There was a need for too many of them. They had to be chosen on a regular schedule, searched out of the general population, and trained in the arts and the skills of the pioneer.

And the man who reached the coveted top of this strange profession won the exotic tab of Free Agent.

These were few in number. Most TEC men never made it, but it was a goal to shoot for. The others were part of a tight-knit organization where none functioned without the consent and knowledge of a score of their fellows. But the Free Agent was all that his name implied. He came and went as he pleased. He chose his own ships and his own men, and set course for his own goals. He was the pioneering elite of a Corps of exploring men, and all his fellows had their eyes on the coveted eagle-winged rocket he wore.

Most Free Agents achieved their status at the Academy, very few managed it later in the field. The common assumption was that it depended on scholarship, personality,

and overall ability. Yet there were certain ones who were not exactly the cream of scholarship in their year. Others could be named by their fellows as more than a little difficult to get along with. All were good and worthy Free Agents, of course, as their record showed. But the code of selection used by the examining board seemed more than a little unreasonable. It was one of the undergraduate mysteries of the Academy.

It had been impossible for Ren Cook to reconcile his experience that fifteenth summer with what he found when he came finally to the Academy at the end of his long preparation. He'd tried to tell himself that his early impression had been wrong, that Jerom Hyle and the wonders of his ship were all the product of a boy's dreaming.

But it was impossible to believe that. Jerom Hyle was something that could never have come out of the TEC Academy Ren found. Jerom Hyle was scarcely the same species of man as Thornton, Ennis, Wentworth—and even Val Grigsby. He could not have been taught the art of the pioneer by such as Instructor Ardman. He could not have produced his great exploits by religious thumbing of the Academy's Handbooks of Standard Procedure. What to do when meeting life form Type G— How to handle taboos of C-18 classification—

Something had happened during the time between the cadet years of Jerom Hyle and those of Ren Cook, and Ren thought he knew what it was. TEC was growing old. Jerom Hyle was perhaps the last of the great Free Agents. Through the vigor of its early pioneers TEC had opened up the starways and the ones following had been content to walk in their tracks. Ordinary rules of thumb, worked out by the great ones like Jerom Hyle, had hardened into alloy-steel Procedures which could not be broken. They had worked—once. But they would never work in situations for which the early pioneers had never designed them. TEC Corpsmen today were following a path that had been new and shining long ago —now it was worn out and deeply rutted and they were living on the glory of days that would never come again.

That's the way Ren had analyzed it after six months at the Academy. Bitterness was deep at first because his idol had turned out to be so wholly false. He'd poured everything he had into the long years of preparing for Academy entrance. He'd never have another chance, he was twenty-eight, an old man space-wise. He'd go back to Mars where he'd come from and return to the life where more pioneering was done in merely staying alive for a week than Corpsmen knew now in a lifetime.

After a little while that impulsiveness changed, its anger giving way to a cold determination to blast, if possible, the stasis into which TEC had fallen. He was frightened a little at the temerity of his decision.

He was alone, an obscure cadet from Mars. What chance did he have to shake the mighty TEC? And how could he be sure his analysis did not contain a flaw?

His doubts about the latter were short-lived, however, as the weeks of indoctrination with fixed Procedures went on. As to the former, his smallness and obscurity—what was there to lose? He laid a careful plan then to blow as wide a gap as possible between the realities of pioneer exploration and the fairyland of TEC Procedures. If he could show how easily men would crack when forced to support the rigid TEC structure, he might find out why no one had seen what was happening and taken steps to change it. He might convince someone there was need of change.

As for himself—Ren Cook, Mars-boy of TEC Academy, had nothing to lose. He had already lost it all the day he stepped onto the Academy Yard.

He was awakened even before alarm time by the sound of activity in the rest of the shack. He arose and looked out. Thornton, Ardman, and Grigsby were up and already at work tearing down the installation.

"What's the idea?" Ren asked Val Grigsby. "I thought we had a few more days to go here."

"Ardman says to cancel the rest of it. Site's too contaminated by Procedure violations to be any more good. He stared bitterly into Ren's eyes as he spoke. "Luckily, Thornton gets passed on his field problem, however. After last night I thought he was cooked."

"Look, I—"

Val looked at him, listening. Something had to be said. He had to act human even if he was forced into ruthlessness as far as the other cadets' problems were concerned. "I'm sorry as hell," Ren said lamely.

"Thornton's sure going to be happy to hear that!"

Val strode away, anger and bitterness obvious in his carriage.

Ren returned to quarters and dressed slowly. He hadn't counted on this. It brought his own field problem that much closer, and he hadn't yet been able to pick a site. It would have to be chosen and submitted for approval before the group left to conduct the next field problem, which was Val's. Every spare moment Ren had been able to grab since the Academy cruiser left Earth had been spent in search of the kind of site that would crack his group completely if they relied on Standard Procedures. He had not yet found it, but he'd come across a faint clue he wanted to follow up. There had to be time to check it before the next problem—even if he had to fake sick leave to do it!

The rest of the party avoided contact with him as much as possible as they broke up the base. The small heli from the scout ship on the plateau began its shuttle trips, carrying equipment back up. Finally, after a half day's work, the six men stood

on the edge of the plateau in the sunshine, looking back down to the chasm of the Muddies. Ren watched the slow, drifting movements of the ceiling of murk a mile below. Far across, almost to the horizon, the opposite wall of the chasm was like a bright curtain in the sun's glare.

He wondered if anywhere in a dozen galaxies you'd find a cut like that, exposing the geological and paleontological history of the planet so completely. Their ignoring it was solid testimony as to what TEC had become. The old TEC would never have passed up such an opportunity, taboo or no taboo—

Behind him, Thornton was snapping abruptly to attention, and saluting the Instructor. "Field Problem completed. Returning the group to your command, sir."

Ardman returned the salute easily, but without the impression of sloppiness. "Thank you, Cadet Thornton. You are to be complimented upon your precision in selecting and applying the appropriate Procedures to the problem. All in all, a very successful contact"—he glanced in Ren's direction—"with the minor exception of violations not entirely under your control, but which, unfortunately, are chargeable to your record. Appropriate notations, however, will be made."

The silence in Ren's direction continued as they joined the two-man crew of the scout and finished loading. By local midafternoon, they took off for rendezvous with the *Paracelsus* just outside the solar system.

Aboard the giant cruiser once more, Ren felt some of the tension draining off. A small crew, isolated on an alien world, in contact with nightmare forms of life—there was a buildup of tension that crept upon a man without his knowing it was there. Values took on distorted proportions.

There were about a hundred cadets based on the cruiser. Three or four groups were still out, but in a few days they'd all be back and the *Paracelsus* would move on to a new area where additional field problems would be run.

As was customary, a boisterous welcome greeted Thornton, which was increased as he indicated he'd passed. Cadets gathered around, everybody talking at once, swapping experiences, building up their adventures to impossible proportions until they were drowned by derision and laughter.

Pointedly, however, Ren was virtually ignored. He made his way through the knot of cadets, receiving only a few perfunctory nods of greeting. It had been that way since the field trip began.

He carried his duffel to the quarters he shared with Val Grigsby and stowed it in the locker. Then he slumped in a chair and closed his eyes, the sounds of horseplay and boastful ribbing echoing faintly from down the corridor. The world of the Muddies seemed far away

and only half real. It took an effort to pull himself out of a mood of self-doubt. It wasn't easy to go on believing all the other cadets—and all of TEC—were wrong, and he was the only one who saw things straight!

He moved to the small study desk across the room and pulled down the thick volume of the Galactic Geographer which he'd marked with a scrap of paper before leaving on Thornton's problem. The book fell open to the marker.

Proteus VI. Hell-world.

Ren stared for a long time at the two indistinct photos and the brief description. It looked as if the planet could have passed for the original setting of Inferno. Physically, it was perfect as a site for Ren's own field problem. It lacked only one item, life of some kind.

Contact with totally new life forms was a precarious business, and TEC had at least learned caution in this matter, if it had learned nothing else.

Men of Earth found they were markedly deficient in one respect when compared with inhabitants of a large percentage of other worlds. They were psionically undeveloped. On the other hand, an incredible number of other life forms were proficient in telepathy, telekinesis, prescience, and in ESP powers generally.

This was a staggering discovery and a fierce blow to the Earthmen who took pride in human evolution. On the practical side, however, it was discovered there were peculiar reactions from some members of the first parties to make such contacts. It was found that they had been literally taken over by alien entities. Psionic forces had been used to usurp the personalities and literally replace the minds of the Earthmen with alien intelligence.

Some of them had to be killed mercilessly. Some were sent back permanently to the planet they'd landed on. The menace was so great that for a time it threatened to block further exploration, because it was recognized that some of these entities were capable of going back to Earth in their usurped forms—and it was supposed they could breed there and extend their influence among the human race. It had not been demonstrated that this was possible. All available precautions were taken against any such demonstration.

The psi helmet was the result of such precautions. On any world where unknown life forms were suspected, the helmet was worn as a protection against invasion of the personality by psionic forces. Rather than permit this, the helmet destroyed the individual wearing it if the level of attack was so high it could not be resisted.

Cadets were not required to conduct field problems on sites where the helmet was necessary. As in the case of the Muddies, they went to planets where life forms were already well known in respect to their psi powers. But Ren wanted a site re-

quiring the helmet. He wanted to see what a group of TEC cadets and their instructor would do in the hellish situation of wearing a bomb on the back of the skull—and not knowing whether or not it might explode at any moment!

The elimination of planetary sites requiring the helmet seemed deliberate. Not one was on the recommended list handed the cadets at the beginning of the flight. But they were not required to choose planets from the recommended list only. There was nothing—absolutely nothing—in the regulations saying Ren couldn't choose Proteus VI. And he'd searched hard since first considering it.

If only there were positive evidence of life—but it seemed so improbable that he doubted he could insist on the wearing of the helmets during his problem. It could be protested to the Commander, Dr. Mattern, and Ren might be reversed on this. And even if he were not, the party would be convinced no life existed on that hell-world and so the effect of the helmet would be nullified anyway.

Ren was convinced no life could be there; he could hardly convince the others of the possibility.

He swore in indecision. A choice had to be made very soon, and no other planet was nearly as desirable in physical characteristics. There was just one long chance that more information might be known back on

Earth regarding Proteus VI. If there happened to be even the remotest indication of life, it would cinch Proteus as his choice.

He reached for the phone and punched a combination. A bored voice answered immediately.

"Communications."

"Data request to Central Library," said Ren. He filed a brief message asking all known information concerning Proteus VI. "I'd like to have a little steam on it if you can," he said. "I have to file site approval soon."

"We gets in line and takes our turn," said the operator.

Ren cut off. He should have known better than to ask favors. But the message shouldn't take long anyway. There was little traffic flowing between Earth and the *Paracelsus.*

As he turned away, the door opened and Val Grigsby lugged his duffel inside. For a moment the two men looked at each other as if not quite believing they had come close to being enemies over their disputes on the world of the Muddies and elsewhere. Their friendship had been close in the beginning days at the Academy.

Val glanced down at the open volume of the Geographer. "Haven't picked yours, yet?" he asked, as if he'd like to forget what had passed between them.

"I'm thinking of one—but I'm almost afraid to use it. It wouldn't be quite the place for a Sunday School picnic."

Val scowled almost sadly and sat down with heaviness on the other side of the table.

"You had strikes against you from the first, because you were from the Martian colonies. But the guys were willing to help you get over your lack of savvy as to how things were done on Earth. For a while you seemed to know how to accept help without acting like a dope.

"But you quit—way back during the last months at the Yard, and have done your best ever since to get kicked out on your big, flat head, and take everybody else along with you.

"I don't get it. None of us do. The guys are plenty sore about your messing up Thornton's problem by nosing into things that violated the Procedures. They've had a bellyful, and are just waiting until you get out on your own problem. I don't think there's any way of heading them off. But I might try if you'd tell me just one thing: why?"

Ren tipped his chair. "I guess you could say I've had a bellyful, too. Remember the big words the shiny little lieutenant gave us the first day? I guess you got the same line I did. 'You're here to learn just one thing,' he said. 'You're here to learn how to be a pioneer.'

"For almost one solid year they've fed us on platitudes about making friends with the natives, and avoiding the discovery of anything a five-year-old kid wouldn't be apt to find. Standard TEC Procedures, they call them. When meeting Alien Life

Type G, apply Procedure 65. That's pioneering!"

"TEC brass seems to think that's the way to go about it, and they've been in the business a long time," said Val quietly. "The rest of us are willing to look at it their way—and I warned you, the guys are out to louse up your field problem any way they can."

Ren's mouth widened in a small, bitter smile. "I guess I've got it coming," he said. "But if that's the way they feel about it I'm going to give them something to exert themselves on. I'm picking Proteus VI."

"Never heard of it. You can't pick it, though, because it's not on the recommended list."

Ren threw open the book and spun it around. "I *can* pick it. The recommended list of planets is no more than a recommendation. The instructions made it clear we could pick any planet in the range of the mother ship. Proteus is only a couple of light-days away—and it's definitely a choice number!"

Val scanned the pages while Ren talked. He looked up in disbelief. "You're crazy! It'd take heat suits, pressure equipment, radiation guards. You won't be allowed to land on a place like that!"

"And psi-guard helmets," said Ren. "The kind that blow the top of your head off if they're penetrated—"

"Your whole party'd back out. Training regulations permit refusal to follow into obviously excessive hazards—"

"We're all *pioneers* — remember?"

Val stared across the table while he slowly closed the book. His eyes searched Ren's face for clues to a mystery he did not understand. "You hate the guts of TEC, don't you?" he said finally. "The guts of all of us who want to do it TEC way. If it's not what you expected, why don't you pull out and forget it? That would be no disgrace. What you're doing, *is*."

"Is TEC what *you* expected—what you hoped for?" Ren demanded.

"Sure—what else did you think? It has to be a tough routine. You have to learn to fit a big organization, learn to take orders you can't understand—made up by men who *can* see the whole picture. You have to learn the Standard Procedures that have been worked out from hundreds of thousands of hours of actual experience. More than a man's full lifetime stands behind some of them. It's not very smart to sneer because you don't savvy the thinking behind them."

"Did you ever stop to think what pioneering really means?"

"We got enough of that in Orientation," Val snapped. "You're supposed to be trying to learn how to be one now."

"Do you think it's possible to learn it? I wonder if it isn't one of the things a guy is born with—or never has at all."

"And the Academy was organized

to teach bird watching. How crazy can a guy get?"

"Look," Ren said earnestly, "the subsidy of pioneers in the form of ships, equipment, and technical training is obviously necessary and very fine. But everything else about the Academy is completely backward.

"By definition, pioneering is the process of meeting the unique or first-time situation. Anything less is not pioneering. You can't apply Standard Procedures to first-time events—the two are mutually exclusive categories. Standard Procedure for contacting Life Form G is fine for a clerk, but useless to you when your next encounter may be with a life form totally different from anything seen before. You're on your own. You can't rely on a Handbook. You've got to think up a Procedure to fit *that* situation right out of your own pointed head. It's something the Academy can never put into you. It's there in the beginning—or it isn't. You're a clerk or a pioneer, and being a spaceship driver isn't what makes the difference.

"Sure I'm bitter! Remember what it's like outside! TEC, the wonder Corps, the glamorous goal of every kid that wants to hit the starways. You worked for six or eight years to make it through that big, iron gate to the inner sanctum of the Yard. Took me thirteen. We don't have fancy basic science schools on Mars. And what do we find after a year of it? Cook book explorers!"

"And you're the only one to see through all this," said Val pointedly.

"No, just the most rabid, that's all. There're others—Collins, Bradford, Jakeman. I've poured more of myself into it than they have, or any of the rest of you. I'm too old for a second chance, so I make an obnoxious jerk of myself because I can't find the right thing to fight. But before I get thrown out I'm going to show everybody concerned just how phony the whole thing is. TEC won't be quite the same, if I can do anything about it."

Val shook his head slowly and smiled. "When you start talking like a crazy man, I forget every sensible thing you ever said. You almost convince me there ought to be more to this than just following the Handbooks on which we're trained. But you're not going to show anybody anything. You're going to get yourself kicked out. A week later nobody in TEC will even remember you were here.

"If I didn't know it was silly, I'd ask why the devil you can't just pull in your horns and go along with the deal we've got. Get your silver rocket, and get out on the starways. That's what you want, isn't it? And there's no other way to get it. Get busted out and you go back to Mars and never see a hyper-drive ship for the rest of your life.

"Maybe that's the way you want it. If so, it's your funeral. There's only one thing I'm asking. Don't louse up my field problem. Keep your trap absolutely shut and do exactly according to the Handbooks

and Standard Procedures for those few hours of your life."

Ren eased the tension in his face and grinned. "I'll pin that little tin badge to your manly, pioneering chest, myself."

"And I'll pin your ears so flat you'll never be able to flap them again if you louse me up!"

That same afternoon an answer came through on Ren's information request. A half dozen photo-typed sheets dropped into the tube hopper over his desk.

He grabbed them up in unrestrained excitement. The sheer volume of material was more than he'd dared hope for after the scarcity in the Geographer. He scanned through the data he already knew. Then in the middle, he stopped.

"This is it," he breathed.

Val looked up from preparation of his reports. "This is what?" he demanded.

"Proteus VI. Somebody *did* land there once before and run into trouble. A man was killed by something the others took to be a life form. Purple globes floating up out of dead craters—ninety years ago.

"It'll require psi helmets to make a landing on Proteus VI!"

Aboard the *Paracelsus,* news travels among the cadets about as fast as the ship itself moves in hyper space. When Ren appeared before the Planning Officer that afternoon to file the location application he was shuttled immediately to the Cadet Administrative Officer. From there he was passed to the top—to the office of the Academy Commander, Dr. Mattern.

Ren had seen the commander previously only from a distance. Now, in his presence, he was astonished at the feeling of physical power in the man. Dr. Mattern was white haired, but his massive frame showed few other marks of age.

Under the sharp examination of the commander's eyes as they raised from the application blank to his own person, Ren felt the first shock of genuine doubt since planning his campaign against TEC Procedures. Who was he to question the functions and operations of mighty TEC? Dr. Mattern was certainly one of the breed who had built the reputation of the Corps. How could it falter with his kind in command?

"You must have a reason for selecting a site other than those on the recommended list," Dr. Mattern said pointedly. "Proteus VI greatly complicates your problem."

"I . . . I came across the brief description of it in the Geographer," Ren said, hating his sudden stumble-tongued speech. "I thought it might be possible to get some genuine, new data on the planet while working out my field problem at the same time."

Dr. Mattern continued to stare at him. When he spoke finally, his lips seemed barely to move. "I don't think you're very much interested in gathering new data on Proteus VI," he said. "I've heard about you, Cook, almost from the first day you

set foot in the Academy's yard. You have been critical of the Corps and its personnel and methods right from the start. You're not trying to learn anything. You're too busy trying to tell us how TEC should be run."

Ren felt the blood draining from his face. His hands clenched tightly at his sides. "I may have been critical at times. I have not been insubordinate, sir."

"I've already seen the report of your behavior in the Thornton group! You're a trouble-maker, Cook. You've never been willing to learn discipline, either mental or physical. Maybe that's the way men grow on Mars. But on Earth, in civilization generally, and in TEC particularly, things aren't done that way. I had hopes you might be able to conform when I first saw your papers. I've watched you, wondering how you'd conduct yourself."

He glanced down at the application under his hands. "I think you'd better withdraw this and select a more suitable site for your field problems from among the list of recommended planets."

"My application for Proteus VI is being refused then?" Ren asked in a tight voice.

"I'm *advising* you to make a change," Dr. Mattern said.

"I'm asking that my application be considered and given authorization or denial."

Dr. Mattern's stare grew heavier. Ren felt he could almost sense the physical impact of the commander's dislike.

"Why?"

Ren let the word hang as if tangible in the air between them. Then he answered slowly, "Because all the pretty little leather-bound Handbooks in the whole of TEC do not contain Procedures enough to cope with Proteus VI or any other world like it."

Dr. Mattern smiled for the first time, but it was a triumphant, unpleasant thing to see. "That's better," he said softly. "That's more like what I've been hearing. You don't like Procedures. You don't like the work that thousands of Corpsmen have spent their lives compiling. You think Cadet Cook can do it better than the way all these thousands of man-years show us is best.

"All right. I'm going to give you your chance to show us up. If I thought you had a ghost of a chance of making a Corpsman I wouldn't do it, but I'm going to give the Corps something to talk about. You are going to become a legend that cadets are going to learn about for many years to come. They're going to be told the story of Ren Cook, of Mars, who thought he was smarter than generations of TEC Corpsmen. They're going to hear about what happened when he took his field group to Proteus VI."

Dr. Mattern scribbled on the bottom of the form and thrust it forward. "That's all, Cook. Prepare your data sheets and equipment

requisitions. And you require the minimum group of five cadets and an instructor who are fools enough to go with you. For the sake of the legend you are to become, I hope you can find them!"

It was done, and he was a fool, and he would become a legend to show how great a fool a man can be. He could have stood against any of them, he thought, but not against Dr. Mattern. He wondered why the commander's strength had escaped his notice until now. He'd been so busy cataloguing the weaknesses of TEC that he'd forgotten to look for its strength. And Mattern was it. How many more like him were there?

But it was too late now. There might be an answer somewhere, but he'd forfeited all claim to any help TEC could give him. From here on out he was on his own, and all TEC would oppose him in finding out the thing he needed to know.

He filed the mass of papers showing the nature of his proposed exploration, the special equipment required, and the personnel who would accompany him.

He got varying reactions from the members of his group when he announced approval of his site application. It was difficult for Ardman, as instructor, to refuse, but he examined the data sheets Ren showed him and finally turned to the cadet with a more than normally pale countenance. "I didn't know you were quite that much a damn' fool—!"

Val Grigsby agreed without comment. Thornton's dislike overrode his understanding of danger. "It doesn't change things any, Cook," he said. "I won't forget the favors you did me. I'll be glad to return the same."

He was surprised that Wentworth and Ennis reluctantly decided to stay with the party.

Mechanically, he prepared to take part in Val Grigsby's exploration, but his mind was so completely occupied with thoughts of his own project that he seemed scarcely aware of his surroundings.

Val had chosen a planet as innocuous and Terran-like as possible, reducing the risk to a minimum. The group landed in a temperate zone that required no suits or atmosphere equipment whatever. They made contact for a couple of weeks with a moderately primitive group of inhabitants and prepared the standard ethnological analysis, and physical survey of the planet in that immediate area. Ardman complimented Val very highly at the completion of the work, pointing out to the others in considerable detail the excellent manner in which Val had selected the appropriate Procedures and applied them. He showed how they had been spared time and grave errors by knowing the taboos to observe and the intensity of approach which could be endured by the natives.

A very successful contact, he observed. And Val would most certainly get his silver rocket.

Val thanked Ren privately afterwards. "I guess it looked like a stinker to you, but thanks anyway for not fouling me up by insisting we find out why they keep their young in darkness for seven years and wall up their wives in a masonry cubicle until they've borne offspring."

Ren smiled absently. "Wouldn't you like to know the answers to those questions?"

"I guess I would," said Val. "But it would have been out of line. The proper number of points is the important thing here. You'll never be able to make it on Proteus. The Handbooks haven't got a Procedure that'll keep you alive even. Why don't you tell them you were wrong and ask for a change?"

Instructor Ardman had somewhat the same thought. On the scout ship during the trip back to the mother cruiser he spoke to Ren alone in the corridor. "I don't think it would be too late to change your application for a field site. Doramus II is nearby—a rather rough place, but we've run some good problems there in the past."

It made Ren feel good, anyway. They were nervous about tackling Proteus, these super-pioneers of the starways. They were afraid all the neatly packaged answers wouldn't be enough when it came to a real showdown.

Ren's position changed the moment he stepped back aboard the *Paracelsus.* He was now Cadet Leader for the next field problem, and his command had already begun.

Supply and equipment stewards were awaiting his instructions. The captain of the scout ship looked to him for data on loading and maneuvering. He felt good. This was the thing for which he'd been born. He refused to let it be marred by the thought that it was the first, last and only time he'd ever know such an experience.

The most important item of new equipment was the psi helmets to be worn inside the atmosphere suits. At a coaching session the next morning, Special Instructor Scoggins explained the use and history of the helmets to the group.

"You can imagine we had a general devil of a time when men sometimes came back to base acting more like the critters we'd come to study than they did like men," he said. "The psi helmet is now required equipment on all expeditions to worlds not known to be psionically clean. Proteus VI is in this category, and you gents who are damn' fool enough to want to go there have to wear them."

He squinted through half-shut eyes, his leathery skin wrinkling in distaste as he contemplated them. "It's still not too late to stick to the gravy ship. Anybody who wants to back out can still say so."

No one stirred.

"O.K. then. Here's the first thing to be aware of. This sealed nubbin

on the side of the helmet contains the response mechanism which is set for a given level of psionic attack. We know there are forces of such magnitude and quality that no means now available to us will provide a completely effective shield. Therefore, we sample the incoming force and measure it against the activity of the brain inside the shield. If it becomes obvious that the brain is responding to the exterior control, the protective mechanism detonates a small charge which blows off the top of the skull, making certain there is no brain for the aliens to control and bring back to base. Is that clear?

"Any questions?"

Ren wasn't quite sure Instructor Scoggins was due a feeling of comradeship or not, but it was certain that he enjoyed this particular portion of his work and that he didn't like cadets in any degree whatever.

They all knew of the existence of the psi helmets from the beginning, of course, but regulations didn't require a field problem be run on a site where the helmets were necessary. They were optional—an option seldom taken up.

There was mild grumbling from Ennis and Thornton about the unnecessary melodrama of the helmets, but Ren ignored it. He had too little time to finish the rest of his preparations.

It was an insignificant run to the region of Proteus VI. The hyperdrive of the *Paracelsus* made the two light-day trip in a matter of subjective microseconds, but even so the shift required the usual preparations of banking down all electromagnetic equipment of any kind. The usual field forces were destroyed while the ship was in hyper-space, and the equipment would be wrecked by the wild transients induced by the shift if precautions were not taken. This was the problem that had blocked star flight for so long. The energies representing human life were barely tolerated in hyper-space. Without adequate protection a man could not survive the shift.

When the flight brought them within viewing distance, the telescopic plates all over the ship were focused on Proteus VI. Smoky gray mist swirled upwards to the height of a hundred miles. Penetration of this cloud with infra-viewers showed a world of volcanic splendor. Fiery and crimson, it seemed as if the basic surface of the planet itself must be semi-molten.

Actually, of course, there were vast areas of dormancy, black, cindery deserts where furious winds stirred the ash and slag to a literal sandblast. Nowhere was there sign of living plant or animal. Obviously, there could be none.

The cadets were virtually united in their first reaction of rejection—of the planet itself, and of Ren Cook's utterly irrational proposal to conduct a field problem there. Field problems were supposed to have a sane objective, a rational goal such

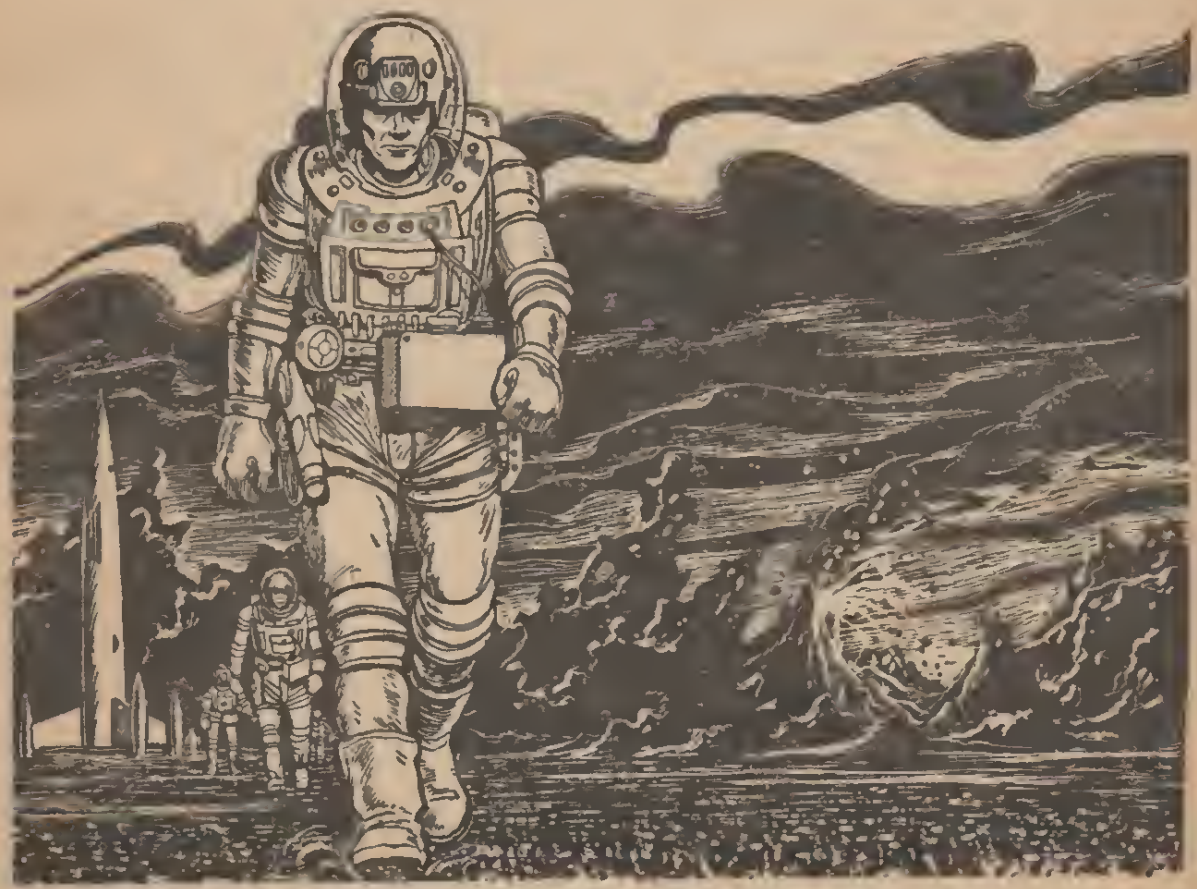
as contact with living aliens or the evaluation of physical properties in regard to colonization or exploitation. A standard TEC exploring group wouldn't give Proteus Vi a second look. Ren Cook could prove nothing here except his own lack of common sense.

He felt the depressing wave of opinion on all sides. He hadn't expected it to be quite so strong. But there was an appreciated glimmer of relief in the open admiration of a half dozen, including Bradford and Jakeman.

"You ought to get the silver rocket just for guts in bucking them," said Jakeman. "As it is, they'll knock you down because you can't carry out a problem there. Sometimes I wish getting into TEC didn't mean so much—"

The *Paracelsus* took up an orbit a moderate distance from the planet. Ren's party was the only one going out in this area, so the cruiser was forced into an uneconomical waiting by most of the personnel. Ren knew this fact did not increase his popularity, but at least it gave him a good audience for his show.

The scout was heavily loaded when it finally dropped away from the cruiser a day later. The usual emergency equipment was doubled. And while it was expected they would establish base in the scout itself, they still carried the knocked-



down exploration shack, modified for use at this site.

The little ship sank into the smoky mist of the planet. From a height of less than a mile, finally, Ren viewed the surface. They approached an area where the desert of black ash gave way to the boiling, broken lava flow that spurted from a thousand cones.

He nodded to the mate of the scout. "Drop the Horse. Let it move along the desert boundary and into those hills." He pointed to a jagged mass of lava, rising from the desert floor, pocked with vast caverns that might have been the channels of old lava flows.

The mate nodded and pressed the release pin. The missile shaped Trojan Horse sped away below them, its remote pickup now activating their screens.

"Not much sense in sending that out," Val muttered. "The Trojan Horse is mainly for contacting and getting data on life forms. You're not going to find any out there, no matter what that ninety-year-old report says. Back in those days it wasn't hard just to scare a man to death."

"At least that's what we'd like to believe, isn't it?" said Ren. "The wearing of the psi helmets isn't a pleasant prospect. Anyway, a TH approach is required, life or no life. I might as well rack up all the points I can."

He noted with satisfaction that his attempt to lighten the atmosphere was ignored. The stress was already heavy. The cadets had read the report he'd obtained from Earth concerning the emergency landing of a Consolidation Express and the death of its First Mate. They were imagining themselves already out on that black desert, a time bomb strapped to their skull.

They'd crack, Ren thought grimly. They'd collapse before a half dozen foot surveys were over—

The slave mechanism hovered close to the surface. Ren took over the controls, moving it beyond the edge of the desert of ebon ash. The fury of surging lava filled their screens. The sound of its sucking, popping, exploding rage came over the audio channels.

The appearance of the crags beyond the desert was deceptive. They were vastly higher and more massive than at first supposed. The cavernous pocks were enormous.

The Horse nosed forward as if cautiously, pausing at the opening of a cave, and floated in. Ren turned on the lights and played them over the basalt walls. A hundred feet ahead, the cavern floor fell away.

Instructor Ardman turned from the view as if bored. He suppressed a strained yawn, which Ren catalogued mentally with satisfaction. Ardman was having a hard time maintaining adequate poise in front of the cadets.

"I should like to point out," he said, "that economy of time is a point in favor on any field problem, Cadet Leader Cook. Since the entire class and the *Paracelsus* are waiting,

I suggest you proceed with personnel landing at once."

"As soon as the TH contact is completed," Ren said. "Handbook 34 requires on a new, unclean site—"

"I know the Handbook," said Ardman stiffly, "but in this case I'm sure we can discount the reports of that old emergency landing."

"With your permission, sir, I'd prefer to complete the contact," said Ren. Ardman turned away with a rude nod.

The instructor *would* like to suggest a thing like that, Ren thought, and then knock him down a few points for an incomplete Procedure. Not that he expected to come through with enough points, anyway, but it showed what he had to buck.

As the screen showed the descending gallery of the cavern he thought of the Consolidated Report. Captain Kinnison's words: ". . . The spheres were seen on the third day in one of the lower galleries. First Mate Rolfs was slightly ahead of the rest of the party when we caught sight of the purple fire encompassing his head—"

He wondered if the body of First Mate Rolfs still lay somewhere in the depths of a cavern like this, where it had been left in the frantic flight of Captain Kinnison's party.

The Horse settled slowly in the dark, winding tube. It appeared now to be a blowhole for gases escaping from the depths, Ren thought. The material for the whole crag must have been raised up, semimolten, and shot through by blasts of gas from the bowels of the planet.

The cadets stood with eyes fixed, unable to match Ardman's unconcern. They watched the Horse go down with wobbling, inquisitive jerks, certain that no life could exist here. But the Consolidation report could not be ignored.

Suddenly Ennis leaned forward, a finger jabbing at the screen. "There's an opening down there—the bottom of the cavern. It must go into an area of molten lava. That couldn't be light from the outside!"

Ren looked, eyes squinting at the small disk of purple light. No, it couldn't be the outside, he thought, remembering the words of Captain Kinnison's report: ". . . Spheres of purple light clustered like bubbles in the air behind us, forming themselves about the fallen body of Rolfs—"

The disk swelled perceptibly on the screen. Ren halted the slave mechanism and waited. The light continued to grow.

"It's something moving," said Val. "It's—"

With astounding suddenness the light filled the whole screen, its blazing purple glory a blinding sheet. Then the screen changed to an exploding burst of white robbing them of sight in the instant before the relays cut it down

And then it was dark.

It was a moment before anyone spoke. Wentworth finally blurted,

"What happened? Where's the light—?"

"I just lost five points," said Ren quietly. "That light, whatever it was, blew up the Horse. "It's five points, according to the Handbook, for losing a Horse."

The incongruity of concern for points at a moment like this seemed to penetrate even Thornton and Ardman. They stared at him as if in momentary, unbelieving recognition of themselves.

"There are a few things more important than points—" said Ardman stiffly.

Facing the panel, Ren grinned bitterly to himself, but withheld comment. Anything he might say now could be construed as insubordination to an instructor—even though he was Cadet Leader.

He manipulated the controls which released a second Trojan Horse, and watched the missile fall away from the slowly cruising scout as the first had done. Cautiously, he guided it to the cavern mouth and searched minutely for any evidence of the force or device that had destroyed the first machine.

There was nothing. He led the Horse along the way the other had gone, eyes alert for the first sign of a spot of purple light. He was prepared to put his machine in quick retreat, but only the basalt walls showed on the view screen.

He approached, finally, the spot where the first slave had fallen. The impression had been that the machine had exploded, but now it appeared almost intact lying on the cavern floor. Ren tried the controls on it. They remained dead.

With the magnetic grapples built into the Horses, he used the active machine to pick up the dead one and began the slow ascent to the surface. No sign of the purple globes showed anywhere.

Everyone crowded the lock gates as the Horses swung into the orbit of the scout. But they had to wait for decontamination. There was a show of radiation beyond tolerable limits.

Afterwards, Wentworth, as technician of the group, was assigned the task of analyzing the downed slave. Ren held up any further action until a report was available. He debated his next move and was curious as to Ardman's reaction to this unorthodox occurrence. It wasn't much like landing on a green and grassy planet and going for a romp with the natives.

That was unfair, of course. The Muddies' world had been far from green and grassy, and some of the others had been even more difficult. But Procedures made him feel that way.

"I believe we can go ahead with a foot-party landing," he said to the instructor, as if hesitant in his own mind.

"I cannot interfere," answered Ardman, "but it is my obligation to point out the Procedures require a positive evaluation of life forms before making such a landing. You

have not yet done this, although evidence of hostility has been established. Any landing of a foot party must be on a strictly volunteer basis. It is my duty to so inform your group."

Ren neglected to remind Ardman of his suggestion for an immediate landing before the first Horse was attacked. The contradiction, however, was baffling. Did they think he was utterly stupid—or did you take that kind of stuff as part of being a TEC man? He wished it had an answer.

Wentworth approached. "Damage was wholly in the electrical circuits of the Horse," he said. "It appeared as if a heavy overload had been induced to burn them out."

"Did you get an estimate of its strength? Is it beyond the safety factor of our suits?"

Wentworth shook his head. "Heat suits with radiation shields would have a factor of at least three over whatever blasted the Horse."

Ren made up his mind then. He called the group together. "There's no way of knowing for sure what the nature of that purple light is. It may be a manifestation of some life form—the life form itself, or a remote mechanism similar to our Trojan Horses. On the other hand it may simply be some natural, nonsentient phenomenon. I'd like to find out, but I'm convinced the Horses are inadequate. We know all they're capable of finding out for us. I want volunteers for a foot party."

No one backed out. But there was no feeling of triumph in Ren as he joined the others in donning the complex suits, including the psi helmets. He'd just realized the size of barrel Ardman had him across. If he held to Procedures and waited for adequate contact with the supposed life forms represented by the lights, he'd probably never complete the problem. They'd have to abandon it and return to the *Paracelsus*, forcing him to select another site. This was an automatic twenty points off his kitty.

On the other hand, rejecting an instructor's advice and putting his party out without completing the TH investigation was altogether worth about fourteen points.

Ardman was going to make certain he just didn't make it.

But he forgot Ardman and all the fantastic inconsistencies of TEC for just a moment as he stepped outside the air lock. His feet sank an inch or two in the black, volcanic ash and he felt the faint thunder in the planet's crust, like the heartbeat of some living thing.

The sky was almost black. In the distance the boiling vapors and spouting lava shot toward the sky in a swirling pattern of light and fury.

This was what it was all about, he thought. To be the first, or one of the first, to set foot on such a brutal world as this—to look to the sky and exult in the achievement of this vast journey from home—that was why a man would put forth all

the effort necessary to bring him here. It was a pleasure whose taste could not be matched by anything else that man could do.

He wondered just how much the others felt it. He wondered if they felt it at all. There was no sign of it, if they did. Maybe he was the one who was out of step, after all, a throwback to the days when a carack or a Conestoga was the basic pioneering equipment. Maybe his emotional response to a world like this was as out of date as those ancient vehicles.

It made sense—of a kind. The consequences of error in the Conestoga days were relatively small, a few lives, a minor amount of equipment. Error now could cost many lives and vast resources, and to safeguard these the Procedures had been devised. A man's emotions were too expensive a luxury in the Age of Space.

There was only one thing wrong. The rigidity of Procedures cost the exploring men the very coin they were sent out to earn, the knowledge and wisdom of other worlds and other races.

He roused from his contemplation at the sudden words of Ardman, aware that his companions were impatiently awaiting his orders.

"Are we to go forward to some objective?" the instructor inquired acidly.

"Yes," Ren snapped with more sharpness than he intended. "The cave. We're going to first determine what the cave can show us about the structure of this crust, and find out, if possible, the source of the globe encountered by the Horse. On a volunteer basis, of course!"

He made his way across the black desert, followed single file by the others. The ship had been brought close to the foot of the crags and waited now, its crewmen alert for communication with the foot party.

They climbed gradually along the increasing slopes of basalt crags. Although the gravity factor was adjustable, nothing could be done about the immense bulk of the suits required by the environment. Ren checked the temperature outside. It was above three-fifty, and the radiation was enough to insure a man's slow death after two minutes' exposure. Proteus was not a pleasant place to live.

At the entrance to the cavern they paused. Exploration here wouldn't earn him much. You were supposed to finish up the routine analysis of air, soil, and liquids before starting off on an excursion like this. But Ren had the feeling he might never get to explore the cave if he didn't get at it at once. And he *wanted* to know how far it went and what might lie at the bottom. Exploring with your thalamus, he told himself. But at least there was more kick this way. Even Thornton had perked up a little as they stepped inside.

The descent was steep, requiring in many places the use of the light plastic line they carried to steady them in spite of the adjustable gravity. Ren paused numerous times to

point out supporting evidence of his theory that the cavern was a giant blowhole. It fascinated him to consider just what conditions might be met at the bottom.

They moved rapidly, swinging out over the vertical descents in slow, free fall. In three hours time they were more than five miles deep and the tube had not contracted appreciably in size.

The nature of the walls had changed considerably, however, becoming sheathed with a luminous glaze. Thermal radiation lifted the temperature another hundred and twenty degrees. They were approaching the limit of their heat suits.

They were a considerable distance beyond the point where the first Horse had fallen, but there had been no sign of the globes of light. Now they came to the end of a long, shallow gallery and looked directly down into a blaze of lava fire.

Conelike, the furnace chamber swept away on all sides. A river of lava disappeared almost directly beneath them and they wondered why the substance of the walls was not eaten and carried away, to the ultimate collapse of the whole structure.

Then the answer seemed obvious. That's what *would* happen. It was what *did* happen, over and over. The whole structure must be unstable, being raised up and broken down at intervals measured by the obscure periodicity of the planet's structure. A period and an interval of how long?

Months? Days? Hours—

Ren glanced at the walls. The illusion of their permanancy was shattered. Perhaps they had formed only yesterday. Perhaps they would return to the plastic lava substance of Proteus today.

He hadn't deliberately planned this extremity. But here it was. What Procedure did you apply when you ran up a blind alley? What did a Corpsman do when he knew such a blunder had been made?

He could sense the questions spinning through the minds of his companions as the swift penetration of their danger came upon them. They glanced nervously at one another. They knew the answer. Procedure observance would have kept it from happening.

"Let's get out of here!" Wentworth said.

"Pictures and samples will take only a few minutes," said Ren. "It would be foolish to go without them. I didn't anticipate the unstable condition of the crust here, but there's no sign that it's in immediate danger of breaking up."

"We aren't going to get to the top in a minute!" said Ennis. "Who cares about pictures—?"

"I must insist on intervening," said Ardman. "The present circumstance obviously constitutes excessive hazards, which your crewmen are not required to endure. If you refuse to order immediate return, I must do so for you."

"Of course," said Ren. "We will return to the surface at once." He

was looking into the bright, surging, roiling depths below. Something exulted inside him at the hellish fascination of it.

Then his attention was caught by a flash of light and a movement on the lower, sloping walls of the cone.

"Look—down there!" he exclaimed.

Sparkling protuberances dotted the walls, their flaring brilliance seeming to increase as the men watched. And from their tips there now emerged tiny, purple bubbles. Bubbles rising and swelling as they floated slowly upward—

Thornton broke and ran, racing frantically back along the gallery through which they had come.

"Thornton!" Ren commanded. "Remain with your group! We'll retreat to the surface as fast as possible—in order! It is not likely we can escape examination by the spheres. Keep moving, and report any subjective reaction as they overtake us."

The party turned as one man and moved back along the gallery, adjusting gravity in the suits for maximum speed. Thornton was waiting a few yards beyond the first small turn. He leaned against the wall, dejected and hangdog in the face of the fact that this might reflect on his own final record, canceling the success of his field problem.

Yet he could still not hide his panic. He pointed behind the approaching men. "They're coming—!"

The others turned, and Ren brought them to a halt. They could not hope to escape the pursuing globes.

Boiling over the edge of the cone, these streamed toward the men. Ren felt the first impact of their wave. The sharp dryness of electrostatic fields seemed to fill his heavy suit. But there appeared to be no penetration of any force the spheres might be radiating. He began to breathe easier in the sense of sheer personal safety. The psi helmet was not going to blow the top of his head off.

And then faintly he heard a whisper and knew his confidence was premature. Something spoke to him with a whisper, and beckoned with a tempting finger—

"Shut it out!" he commanded. "Hold it back! In a minute we'll know—"

Here was no Standard Procedure, no Handbook panacea to apply. He felt the vague, frightened recognition of this in the glance of his companions. And in a minute he'd know how a man stood up when he'd abandoned all his own resources for the assurance of Standard Procedure.

He made no claim to immunity from fear for himself. The only difference between him and the others was that he knew there was nothing in TEC for him to fall back on. This moment was entirely his own.

The sweat formed in growing beads on his forehead. It trickled in hot rivulets down the sides of his

cheeks. In a minute—or less—they'd know whether the psi helmets would hold against this onslaught or whether the explorers would be destroyed to protect the *Paracelsus*—and Earth.

The whisper and the tempting cry for permission to enter their minds built up to thundering, crushing waves. Ren saw Thornton and Ennis stagger as if hit, but the detonators in their helmets did not go off.

And miraculously the men held. The panic Ren expected did not appear. They did not break.

Then, as if the attacking force had reached its peak and could go to no greater heights, it diminished. Ren felt it withdraw like some physical probe from his mind—and he was free.

He felt stunned by the resistance of his companions. It wasn't possible for men who believed in the Handbooks to withstand such an attack. But they had.

They stood there, knowing death might come at any instant and endured it as well as he.

He turned. "Everybody all right?" he asked. "That's the kind of deal the psi helmets were made for. If we hadn't had them, we'd have been robots for whatever makes these globes go."

Maybe he'd been wrong about them. Maybe he'd been wrong about the whole thing. This had been a greater test than any field problem ever made of them, and the TEC trained cadets had not broken. How could he have been so wrong? Where was his error?

"Let's get out of here," said Val. "We've had enough for today."

Ren moved ahead of them, leading the way. Behind and around the group, the purple spheres hovered as if in puzzled wonder, but there were no more attempts to invade their minds.

The party had come prepared to camp within the cavern for at least thirty-six hours. After tedious hours of climbing, with the hideous following of the purple spheres, Ren put it to a vote. No one wanted to stop.

In spite of their resistance under attack, Thornton, Ennis, and Wentworth were close to panic. The silent, inescapable threat of the spheres was more frightening in some respects than their actual attack. Ren wondered just how well Ardman was holding up. He had a good front, but it seemed shaky to Ren. Val was doing better than the rest, but he voted, too, to get out as quickly as possible.

Ren tried again to analyze his own feelings. He had no edge on bravery, and maybe what he displayed could not even be called that. It could be called no more than recklessness, perhaps, due partly to his defiance of TEC, and partly to the knowledge that this was the only deep-space exploration he'd ever know.

The others had no such incentive to be particularly brave or defiant of the spheres just now.

In spite of diminished gravity, they were exhausted when they reached surface. The sight of the scout ship was like a glimpse of a haven they had scarcely believed they would ever see again. They staggered into the lock and listened to the sweet sound of air passing through the valves.

Alone in his quarters after they'd eaten and rested, Ren labored over his official report of the contact, which could contribute substantially to his rating on the problem. He glanced over what he had written. It was puffed up as much as possible, in his effort to indicate that real accomplishments had been made in their first contact.

Maybe it was close enough to accepted TEC type to get by—yet anybody who wasn't a complete ass would know it was phony. He hesitated a moment, then ripped the pages crosswise and threw them into the wastebasket.

They had accomplished nothing so far, but since the spheres could not penetrate the psi helmets he'd built up hopes of establishing communication with them, or whatever entity lay behind them. That seemed a futile hope. He couldn't do it alone, or with a group as close to panic as his companions had been, even though they hadn't broken.

In spite of the high-flown phrases used to describe the field work of the Academy nothing could hide the fact that they were mere schoolboys working on problems. None of it was real. It couldn't be made real.

He glanced up at the sudden knock on the door.

"Come in!"

Instructor Ardman appeared as the door opened. He took a chair across the table from Ren.

"Your group has taken a vote," he said in slow, precise tones. "They voted three to one to withdraw from the problem on the grounds of excessive hazards and leadership that is incompetent to adjust to such hazards. The report has gone out to the *Paracelsus*. We should know in an hour or so whether you will be permitted to continue with the problem."

Ren's face drained of color at the implications of Ardman's words, but he made no reply.

"I would suggest you might yet be able to salvage something out of this situation," Ardman continued after a pause. "It *might* be that Dr. Mattern would consider favorably your own admission that you had chosen an unfeasible problem and not apply the usual twenty-point penalty for noncompletion.

"I would be willing to throw my influence on your side if you feel you'd care to send in an appeal for immediate withdrawal. It ought to reach base before they judge the report already in their hands."

Ren smiled thinly then. "You'd like to see me pull out now, wouldn't you?" he said. "You know as well as I do that I'd get belted with the twenty-point penalty even if I chose Earth for a site. The boys

swore they'd get me for interfering with their problems and I guess I walked right into it. But *I'm* going to make a little report of my own! I'm going to—"

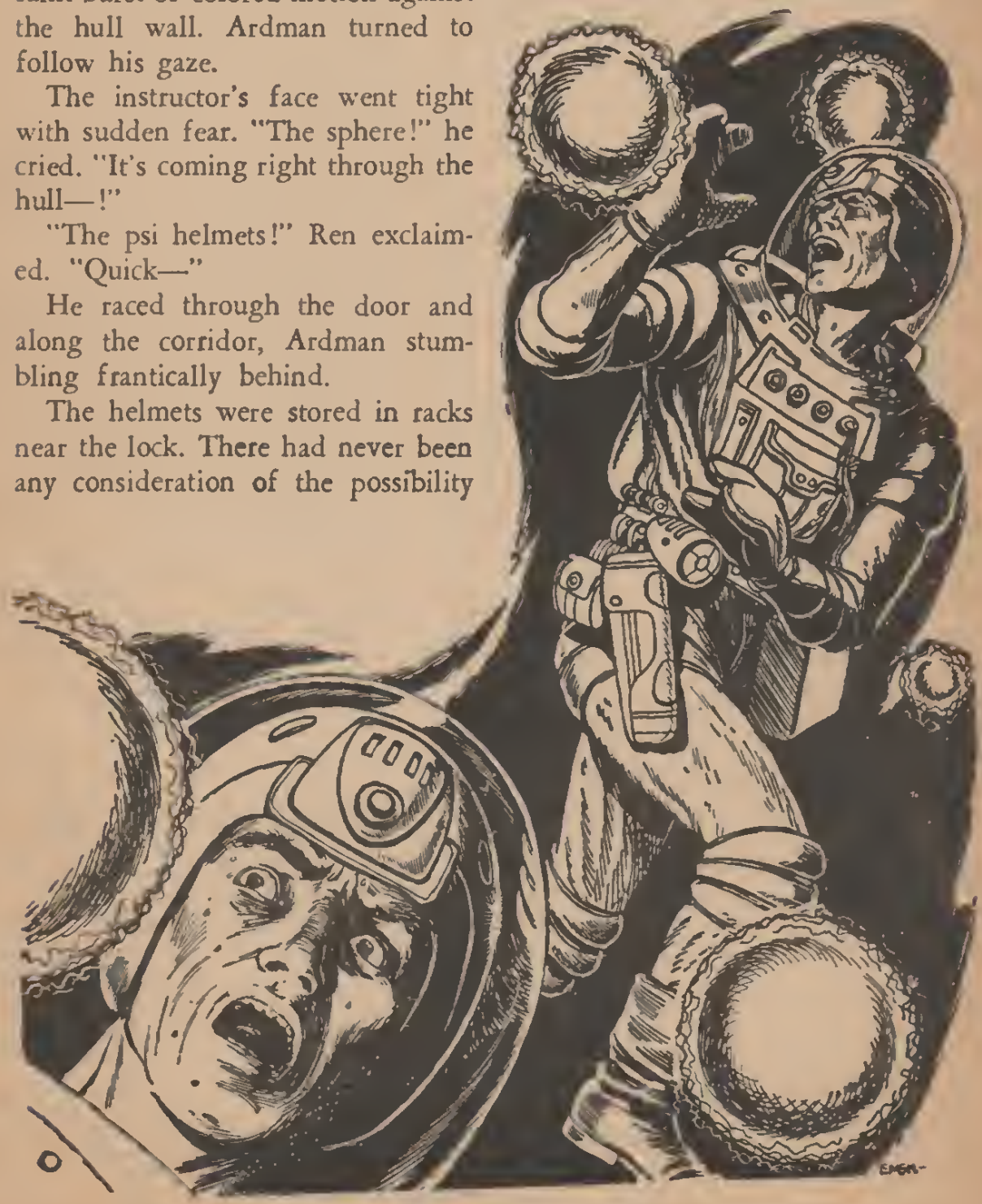
His voice suddenly stopped. Out of the corner of his eye he saw a faint burst of colored motion against the hull wall. Ardman turned to follow his gaze.

The instructor's face went tight with sudden fear. "The sphere!" he cried. "It's coming right through the hull—!"

"The psi helmets!" Ren exclaimed. "Quick—"

He raced through the door and along the corridor, Ardman stumbling frantically behind.

The helmets were stored in racks near the lock. There had never been any consideration of the possibility that psi energies might not be blocked by the ship's hull and the vast energy field maintained constantly within it to assure readiness for instant take off. Yet the purple spheres could come right through it.



How long could they be certain the psi helmets themselves would hold out?

He should order blast-off—but they couldn't return to the *Paracelsus* until they were sure no spheres were aboard. And how could they ever be certain of that—

Ren reached for a helmet with one hand and the intercom button with the other. "All hands don psi helmets at once!" he commanded. "Spheres have penetrated the ship's hull."

He moved to adjust the straps of the one he held. And then cold, panicky disbelief surged through him. He stared at the small control nubbin on the side of the helmet. Shiny tool marks and crimped metal edges showed the threshold control had been tampered with.

So he had been right, after all!

The fair-haired boys, acceptable by present TEC standards, had cracked before they were even faced with the prospect of psi attack. They had altered their helmets to make certain they ran no risk of death in some encounter with aliens.

A crooked, crazy way of thinking in view of the alternative, which was possible mental domination for the rest of their lives, exile on Proteus for as long as they could live there—

Ren whirled on the instructor who reached for a helmet beside him. "Wait—check it!" he exclaimed. "Look at this—"

Ardman glanced down. He stiffened involuntarily at the sight of the tool marks. "Is that one you—?" he demanded.

"Of course not. I just grabbed the first one I came to on the rack. Here's the one I wore in the cave." He examined the nubbin on it. It looked secure. "Have you got your own? Is it all right?"

Ardman nodded. "No, someone's monkeyed with it."

Ren tried to get a closer look as the instructor put it on. He wanted to be very sure it was unaltered.

Others of the crew and cadet group were rushing up now, grabbing helmets off the rack.

"Be sure you get your own," Ren said icily. "You guys who have tampered with the threshold setting wouldn't want to get a helmet with the normal adjustment and run the risk of having your head blown off instead of merely taken over."

They turned to stare at him, some halting in the adjustment of the straps to examine the control nubbin. Ren noted carefully those who seemed genuinely surprised and shocked. It wasn't the cadets. The crewmen were the only ones who showed surprise. The others merely hardened their glances in his direction.

Ren's hand reached through the partly opened door of the weapons locker next to the air lock. He snapped a pistol in front of him, covering all of them.

"Cook—!" Ardman commanded.

"Stand back," said Ren. "I'm still Cadet Leader and I intend to stay

in control. This is the thing I was looking for. I didn't know just how it would appear, but I was certain it would show up if we stayed here long enough.

"It didn't take very long, after all, did it? TEC men—the daring heroes of the spaceways! Aren't you proud of your work, Instructor Ardman—the kind of pioneers you and all the desk-bound Procedure writers at the Academy have produced? These gentlemen weren't quite brave enough to risk contact with a psi life form on the usual basis, but they didn't have guts to back out of the party, either. That, or else they were so determined to spoil my field problem that they came along at all costs.

"Either way it gives you a picture of your exalted TEC. A troublemaker, Mattern calls me, can't conform to a pattern, or fit into a big organization. I'm lucky that way, I guess. Out on Mars we learn that things don't come in endlessly repeated patterns. Only when they're dead. As long as you're alive you take each new thing for what it is and meet it that way. You don't fit it into the casket of the dead past.

"So how about a Procedure to cover the present situation, Ardman? When a group of up and coming TEC pioneers has no guts, what do you do—apply Standard Procedure 62-A or 95-B? Don't tell me you haven't got one, instructor?"

"Put down that gun and stop acting like a fool!" Ardman commanded. "I'll take control of the situation."

Ren waggled the pistol. "Uh-uh. My field problem, remember? I'm in charge until we get back to the *Paracelsus*—if any of us ever get back. Frankly, I admit I don't know the proper Procedure to cover a deal like this. If anybody can quote me the page and paragraph, I'm open to suggestions. For the moment, however, let's rely on seat-of-the-pants operations.

"Anybody with altered psi helmets can go into the air lock for temporary storage until we can find a better answer. My four colleagues appear to be in that category. Everybody else take a look at your neighbor's helmet. If it's got tool marks, he may be under control of the globes. Let's keep *him* under control as long as possible."

"You're crazy!" Val Grigsby snapped. "Maybe we did turn off the detonators. Who wants to run the risk of getting the top of his head blown off, anyway? How do you know those things couldn't go off accidentally? But you were there with your helmet unaltered. Our helmets were operating up to the same level as yours. There's no proof any of us isn't just as normal as you are!"

"That's the hell of it, isn't it?" said Ren quietly. "I *don't* know the the spheres have got you. But the burden of proof is on you. Do you know any quick way of proving they haven't?"

The four crewmen were angry.

Roughly, they forced the cadets into the air lock and slammed the door. "We'll have to dump them," the captain said. "We can't risk taking them back to the ship."

A purple globe floated slowly through the air between them. It was the first Ren had seen since coming from the bunkroom. Two others followed.

"Do you want to be responsible for dumping them if they're clean?" said Ren. "But that isn't all the problem. There's no guarantee all of us are clean, either. I just happened to see a bubble coming through the hull. It needn't have been the first. Any of us could have been taken over before I saw that one. We've got the same problem as the boys in the lock."

Keeping the others covered, he moved toward the corridor and backed to the communications room. "I just want to make sure we're all in agreement, and then I'll put this thing down," he said.

He called the *Paracelsus*. In a moment the operator answered. "Commander Mattern," Ren said.

"I'll relay the message."

"Disaster emergency," said Ren. "Commander Mattern at once, please."

There was a moment's hesitation and a frown on the operator's face. Then it disappeared to be replaced in a moment by that of Dr. Mattern. He scowled in annoyance, then raised his eyebrows in quizzical surprise as he saw Ren holding the gun.

"This is Ren Cook, trouble-maker from Mars," he said. "You remember me."

"What's the meaning of this?" Mattern demanded. "Where is the captain — and Instructor Ardman? I'll take my information from them."

"You'll have to take it from me, commander. They are temporarily on the other side of this gun. Now listen carefully to what I have to say: There's been a failure of psi control in this party. Don't pick up a single man here unless you have positive means of identifying him as psionically clean. Abandon the entire party if you are in doubt. That's it."

Briefly, he told the entire story while the commander listened with icy countenance. When he had finished, Mattern spoke. "I was hardly wrong about your trouble-making abilities, Cook. I wasn't prepared for such wisdom as you have shown in this emergency, however. You are to be complimented.

"Perhaps you are not aware of the Standard Procedure to use in this case. It is contained in the Restricted Handbook only. It calls for immediate abandonment of any party whose psi control has failed."

"It's the first sensible Procedure I've encountered in the whole damned Academy," said Ren with unrestrained bitterness.

"There is one ameliorating circumstance, however, in your case," Commander Mattern went on. "It seems that even before they boarded your ship the purple spheres found

their way here to the *Paracelsus*—"

Ren stared at the commander's bland image. "Through open space—!" he exclaimed.

His mind felt staggered by the blow of this unexpected information. All his conclusions and computations were made worthless by it. Keeping his group from reboarding the *Paracelsus* was no longer important.

Getting back *was*.

No one knew the mind or purpose of the spheres. All action had to be based on the most negative assumption. Contact with psi life forms capable of dominating a man's mind could make no allowance for doubts, maybes, or hopeful assumptions. You assumed the worst. You assumed they were intent on inhabiting human bodies, that they would go to Earth aboard the *Paracelsus*, breed there, take over all human bodies eventually. You assumed their reaching Earth meant the end of the human race.

All psi control was premised on that kind of thinking. Any other kind placed initiative in the grip of the psi life forms—and left man without it.

And now Mattern said the spheres could navigate open space as far at least as the orbit of the ship. They were aboard the ship in unknown numbers—

So Mattern said.

Was it true? Could it possibly be more of the crazy manipulations of TEC thinking?

If it were true, Mattern was obviously under control of the spheres, because he was not now wearing a psi helmet. Had any of the crew of the *Paracelsus* been able to get psi helmets before the attack of the spheres? There was no way of knowing. But that was of no importance anyway. Mattern was operating under the instructions of the spheres. That was the only fact of importance now.

The commander was watching Ren closely. "As in the past," he said slowly, "it is apparent that you have made conclusions based on wholly inadequate observation, Cadet Cook. I had hoped to learn that it was different this time.

"We have been able to establish communications with the life form represented by the spheres. We find you wholly wrong in your anxiety concerning them. The spheres are completely innocuous, desiring only contact with us as we did with them, for mutual study and exchange of data."

Ren felt his hands trembling faintly. There was one way to find out for sure—

He released the straps quickly and removed the psi helmet. He laid it on the communicator's desk in front of him. "In that case, commander," he said, smiling broadly, "it appears we are among friends—"

Mattern's face relaxed suddenly, and his answering smile was equally as broad. "Indeed it does, Cadet Cook," he said heartily. "We will await your immediate return."

Ren's hand slashed down, cutting

the communication channel. In the same sweep he grasped the psi helmet and crushed it to his head again. As he turned, he saw a purple sphere weaving swiftly toward him along the corridor.

Ren's hand relaxed its grip on the gun and lowered it to the table. The weapon had assured his getting a message to the *Paracelsus,* in case any of others in the scout opposed such an action—either because they were controlled by the spheres, or to save their own skin.

Now the gun was of no more use. He could not stand alone against the thing that had happened. He had to have them, and if he couldn't win them there was nothing he could do. The spheres *couldn't* have all of them. Maybe they didn't have any—

"The situation has been changed from what we thought it was," Ren said slowly. "It isn't just the few of us who can't go back to Earth any more; it's the training cruiser and everybody on it. Commander Mattern must now be assumed to be a zombie under control of a purple sphere. Maybe he's the only one—or maybe everybody else aboard is, too. Whatever the answer to that, as long as even one sphere has penetrated the ship, the *Paracelsus* must never return to Earth, regardless of what it costs to prevent it! Do any of you see it any other way?"

Captain Miller seemed to speak for his crew in the slow shake of his head and the look in his suddenly gaunt eyes. "It's got to be stopped," he agreed.

"Commander Mattern — or the globe holding him—thinks for the moment at least that I am with him, also under control by a sphere. How long he'll go on thinking so, we can't tell. Maybe the globes here have already told him I was faking. We have to chance that. But as long as present conditions hold, we've got a way back to the ship."

Instructor Ardman struggled to draw himself erect, a struggle that was only partially successful for the instructor still appeared to sag against the metal door frame behind him. He was cloaked in a state of half-shock.

"You are forgetting that I am the one who makes policy decisions, Cadet Cook," he cried in a thin, excited voice. "Your field problem has come to an end, in view of the present emergency, and so has the authority momentarily allotted to you."

Ren shook his head and smiled grimly to the crewmen facing him. "I suggest," he said, "that no one authority exists any more. We act as a group, or not at all, for so far as we know with any degree of positiveness no one outside ourselves stands between the purple globes and Earth. And we cannot even be sure this group is not contaminated to some degree!"

Captain Miller nodded more forcefully now. "Cadet Cook is right," he said to Ardman. "We've been leveled out beyond any position of authority we held aboard the

Paracelsus—or aboard this scout ship. We're citizens of Earth, concerned with the danger of a psi life form getting back home. We have to agree on a course of action to prevent it. Things are as simple as that."

"And what is *your* proposal for a solution to this problem?" asked Ardman stiffly.

Captain Miller shrugged faintly. "Cadet Cook has stated what we have to do. The Restricted Handbook provides for abandonment of an entire party when any degree of psi failure occurs. Our plan of action seems obvious. Cadet Cook has provided a means of access to the *Paracelsus*. We'll take off at once, try to take over the ship, put her in hyper-drive in the opposite direction from home—and open all ports and locks. That will give positive assurance that the globes will never reach Earth via the *Paracelsus,* at least!"

"And how many uncontaminated men will you kill in the process?" Ardman demanded. "*We're* clean. And so may be most of the crewmen of the *Paracelsus*. You can't jump to the conclusion they're all contaminated!"

"No one's jumping to any conclusion," said Ren quietly. "*I'd* like to see Earth again, and I assert that I'm psionically clean so that I could return. I'm willing to grant that a hundred others aboard the *Paracelsus* may be the same.

"It's a problem of separation, which can't be solved by any means now known to us. You just can't tell the good guys from the bad guys." He smiled wryly. "Or you might say this is a genuine Aristotelian situation, an absolute yes-no problem. We have to support a yes answer, down to the umptieenth million decimal place. Anything less is a no answer. There is absolutely no shading in between.

"Captain Miller has given the only possible course of action: complete destruction of the *Paracelsus* and all her personnel."

"That's utterly insane!" cried Ardman. "We can find some way to determine who's controlled by the spheres and who is not!"

"It's in the Handbook," Ren said softly.

Ardman glared like a trapped animal. "This is different!" he snarled. "This is the whole Academy class and its instructors."

Captain Miller moved. "We're wasting time," he said. "Perhaps on the way out—a miracle may occur in the form of a thought that will enable us to obtain separation of the personnel—and decontamination of the ship.

"Right now, we've got to act, before something happens to change Mattern's mind about letting us in. If that happens we could do nothing but try to ram the *Paracelsus* with the scout. We'd be lucky to make a good-sized dent."

They moved the four cadets from the lock to their quarters and blasted off. Ardman was in a state of complete funk, but the four crewmen

of the scout were grimly determined to carry through, Ren observed. He felt reasonably certain the globes had not taken any of them over. He wondered about Ardman, however, and kept close watch on the instructor all the way out.

It was a thirty-minute journey to the training cruiser. Ren had time enough to review—and regret—everything that had happened since he first came to the Academy.

He'd made a bust, and it was going to cost the lives of a whole class of cadets, and the Academy leaders and crewmen of the *Paracelsus*. It was a high price to prove a point. That he had found that proof was meaningless now.

TEC *was* criminally inadequate. Its men were trained for clerkships instead of pioneering. The incredible lack of preparation that made it possible for the spheres to take over the training crusier was the peak of irresponsibility. If he hadn't had it from Mattern's own lips he would not have believed it possible.

But it had happened. And now they were through. All of them. Through with all the fine goals toward which their lives had been aimed.

He wondered momentarily if there were any possible way out for any of them. Maybe Captain Miller was right—they could set the controls of the *Paracelsus* at full velocity away from Earth, and then maybe there'd be time to solve the problem of decontamination. But he knew this was a futile hope. Even with every possible means of detection showing negative results, there would be no absolute knowledge the ship was clean. A negative test cannot yield positive action on a strict Aristotelian yes-no basis.

There was *no* way out. Consideration of a return to Earth in the *Paracelsus* was consideration of the loosing of a parasite that could destroy mankind.

Not that he or any of them knew positively this would be the case. It was simply that there was no way they could ever *know* it would not be. Only their deaths and destruction of their ship would assure this.

They spotted the dark, open maw in the stern of the training cruiser as the scout drew near. "Looks like they're going to let us in without any questions asked," murmured Aswell, First Mate of the scout.

Captain Miller nodded. "The critical points will be our emergence from the lock and again when we rush the control room. The element of surprise should be on our side as long as possible. Let's keep it that way by moving fast! If there were only some way we could contact the guys inside who may still be clean—"

"There isn't," said Ren. "There's no way of knowing who's a zombie and who isn't. We've got to come out of the lock shooting, and forget that the guy who's trying to stop you may be a clean buddy!"

He stared through the port. He

thought of Jakeman, Varney, Dutch, Bryley—good guys, all of them. He hoped he had guts enough to go through with it. A purple globe moved serenely between him and Captain Miller. He slashed out viciously with a gauntleted hand. The sphere was not disturbed.

The scout maneuvered close to the cavernous womb of the mother ship. With gentle precision it edged forward, thrust its nose inside, and was nudged to position by the automatic grapples. The hull doors rang shut behind it.

Inside, the men of the scout waited in protective suits, bearing the psi helmets on their heads. Weapons ready, they listened for the hiss of air cleaning out the tube clamped to their outer lock. Controls were set to open the doors as soon as it was ready.

They moved then into the lock of the scout as they heard the jar of relays cutting the air pumps. Slowly the outer door of the scout swung open. Ren took a step and hesitated. The door at the other end of the tube remained closed. He waited twenty seconds while the others followed him into the tube. Then he knew that something had gone wrong.

"We'd better blast the door down," said Aswell. "It's too late to go anywhere but through it."

"Hold it," Ren said. "There may be something wrong with the mechanism." He switched his phone to the channel of the intercom on the *Paracelsus*. "Scout ship from Proteus reporting back," he called. "We're at the tube door. It hasn't opened. Will you use manual on it?"

"As soon as you put down your weapons and get out of your suits," the voice of Commander Mattern spoke. "You didn't suppose you could attack and take over the entire cruiser, did you, Cook?"

Ren felt sickness swarming through his body. The globes *had* warned Mattern, of course, and it hadn't been enough to abandon the party on Proteus. He wanted them brought back to make their destruction absolutely certain.

Ren switched back. "They've been tipped off. Our only chance is in blasting through. Get back against the scout and fire together—"

Even as he spoke he sensed a high whining note spinning through his brain. Consciousness wavered and the gun dropped from his hands. An acute wonder filled him as he recognized this was some strange weapon withheld in secrecy by the TEC brass. Maybe they were smarter than he thought—

When he came to, he was lying on his back looking up at the underside of Val Grigsby's bunk. Every nerve in his body felt as if it were being caressed by a very dull saw. He shuddered and sat up.

Across the room a cadet guard stirred and shifted the gun in his lap. "If you're awake," he said, "there's a big meeting ready to convene in the conference room for

your special benefit. Commander Mattern wants to know as soon as you're ready to appear."

Ren shook his head. The sawing of his screaming nerves seemed to diminish a trifle. He looked at the guard and considered his jumble of words.

Mattern, as TEC commander, he could have understood. Mattern, as a controlled zombie of the purple spheres, had little purpose in calling Ren Cook to accounting for his failure.

He struggled to an objective consideration of himself. It must be that the spheres had taken him over, too. But he didn't feel like it. It seemed as if he was thinking his own thoughts, moving his own muscles. Maybe the spheres didn't bother you except when they had some special command. Apart from that you might be on your own—with never the power to strike back at the captors.

The guard was on the intercom. Ren heard him saying, "He's awake. A shot of zirconol will bring him around now." The man nodded and cut off.

He turned to a kit on the table and pulled out a hypo which he carefully filled. "You want to stick yourself with this, or do I have to?"

Ren accepted the needle and jabbed it into his forearm. Almost at once the agony in his nerve channels dimmed and his reason felt clearer.

"I'm ready," he said after a moment. "What's the party for?"

Nothing made any sense, he

thought as he moved ahead of the guard. The spheres were in control, on their way to take over Earth. Any other fact beyond that was meaningless—

He was ushered into the plushly furnished conference room and the door closed behind him. Around the big table sat Mattern, the Cadet Administrative Officer, the Director of Field Planning—the whole array of brass aboard the *Paracelsus*. Ren got a faint shock from the sight of the figure at the end. Instructor Ardman sat there smiling blandly.

Who had called the gathering, the spheres or the men acting independently? And for why? But beyond that was the difficulty in assessing his own thoughts. He still considered the spheres a menace. Would he be able to think that way if they were in control?

The dozen men were watching him. There were faint smiles on their faces. Approval? It almost seemed so. But that made no sense either.

Then Mattern spoke. His voice was warm, as it had never been before when speaking to Ren Cook.

"You gave us a rough time for a while," he said with a trace of amusement in his voice. "We're sorry we had to give you such a rough treatment in return. That internal sonic blast is hard on a man's nerves. It was the only thing we could use, however, that wouldn't touch off the detonators in your helmets."

Ren tried to find an element of sense in the words. There seemed to be none. "Where are we headed?" he demanded.

"Toward Earth," said Commander Mattern. "We have a couple more field problems to run on the way, but we're moving toward home now."

"And taking the purple spheres of Proteus VI with you to breed and infest Earth, to take over mankind the way they've taken us. Can't you see what they've done? Somehow, they're letting me think on my own for the moment. Aren't any of you able to do it, too?"

Mattern smiled more broadly. "Oh, yes, the spheres. I'd almost forgotten you would still have an active reference to them. But the spheres aren't with us any more. You needn't be concerned."

"You mean they'd like to have us act on that assumption! Can't you separate *any* of your own thoughts from their control?" Ren's voice was almost a sob.

"I mean they aren't here. They are purely force fields of an electromagnetic nature. You know what happens to such a field when the ship goes into hyper-drive. We've been on it for a couple of hours, but any spheres that might have been aboard were destroyed in the first half microsecond."

"How do you know? How can anyone know that isn't an illusion of the spheres themselves?"

"The two cadets who came under their control on the scout ship have completely recovered. It took them

less time than it did to bring you out of the internal sonic."

"Yes—and how about all the men aboard this ship? All of you—do you suppose the spheres would even allow you to go into hyper-drive if they suspected it would harm them? And they would get that information from your minds."

"There were never any spheres aboard the *Paracelsus,*" said Mattern. "Do you actually suppose we would be so careless? TEC has been out here in deep space before, you know. We were quite aware of the existence of the spheres and all their properties. The Academy cruiser is adequately shielded."

Ren stared in disbelief. "Then why did you tell me they were here?"

"In order to get you back before you did anything drastic like dumping out your fellow cadets and cutting your own throat to keep us from picking you up."

Ren looked from one to the other of them, a hot wave forming in his throat. It could be—

It was! he thought. They had sent him out and watched him make an utter ass of himself. They'd played with him, laughed at him.

"Why?" he demanded in sudden, heightened bitterness. "You could have told me how the spheres could be destroyed. I suppose this is TEC Procedure for handling a man who sneers too openly!"

There was no need for caution in his words now. There was nothing they could do to him beyond what they had done and were about to do. He was right back where he had started. The conference was only to bait him and finally inform him of his dismissal from TEC Academy. And in that moment of awareness he felt a wave of sudden, unforeseen regret. Never to set foot again on a hyper-drive ship, never to see another planet like Proteus VI—

He wondered if he couldn't have handled it differently. What was knuckling under to Procedures compared with the loss of the starways?

"We could have told you earlier, I admit," said Commander Mattern. "But you weren't quite through with the field problem. We wanted to observe you during the succeeding events.

"You've had a deep, inborn hatred of the Academy and everything it represents since the moment you stepped into the Yard for the first time. You've fought us and sneered at Procedures every step of the way. We wanted to see what you would do when you took your group out. We saw.

"You tried to destroy it. You were willing to risk your own personal safety even, to show your companions as inadequate. Such an attack we found quite curious, especially after it took some doing on our part to keep it from turning into disaster.

"We think we have some right to an answer to our question: Why? Why were you so determined to destroy your party in one way or another?"

Ren kept his eyes steady on the commander's severe, demanding countenance. "I've already told you there were not enough Procedures in all of TEC's Handbooks to cope with a world like Proteus VI," he said. "And I took the group out for the specific purpose of proving it.

"I went out to prove that predetermined actions will always break down in a situation that is not equally as rigid. I went out to prove that men who have only such rules and nothing else will break.

"I proved it. They could face neither a contact with operative psi helmets, or get up guts enough to refuse to go. So they altered the helmet controls instead. An act of pure insanity! I have proved your boasted pioneering training is fit for nothing but clerks!"

Mattern regarded Ren silently for a long time. "You also demonstrated you were willing to fight us instead of winning your silver rocket," he said finally in tones so mild they shocked Ren.

"Nothing you showed me was worth working for. I came to TEC to be a pioneer. I discovered I'd have to go back to Mars for that. But I was determined to prove one thing before I left, that TEC was a phony. You know that's true as well as I do.

"And before I'm dishonorably discharged I think I'm entitled to ask, why? TEC cost me the preparation years of my life and gives nothing in return. It's nothing but an old woman's knitting club!"

White with the momentum of his own fury and his temerity before the commander, he waited for Mattern's blast.

But it didn't come. Instead, the commander's head nodded slowly. "There's a thing we had to discover, too. We had to know if you hated the TEC we showed you, enough to fight it, enough to sacrifice all you might have gained by passive compliance. We had to know if you had guts enough—if you were pioneer enough!—to fight us."

Ren stared uncomprehendingly as the commander's words sunk into his mind. He couldn't be hearing correctly!

"I don't understand—" he murmured.

"I think you do. Otherwise, you would not have acted in the manner you did. I want to compliment you, Cook. In all aspects of your performance since entering the Academy you have done very acceptably."

Ren continued to stare. Such sarcasm was hardly to be expected of Mattern even in the present extremity.

The commander waited, then continued. "It is possible you don't yet comprehend the full significance of what you have done, Cadet Cook. You have passed your Academy work and your field test with the highest possible achievement. This conference has been called for the purpose of awarding you the rating of Free Agent in the Terran Exploratory Corps."

Ren felt as if he'd been struck

a blow in the face. He had an urge to return brutal laughter for the crude joke they were playing before his dismissal.

But the faces before him didn't have the expression of jokesters. There were faint smiles, friendly smiles, but no derision. He felt hollow and ragged with misunderstanding.

"I still don't know what you mean, sir," he stammered finally.

"In TEC we reverse the usual procedure in the academic field," Mattern answered patiently. "Graduation from the Academy is determined not by high standing, but by failure. This you have achieved with notable success!"

Even as Mattern spoke, Ren felt as if a great light had been suddenly turned on inside him. He had an impulse to laugh in relief of the intolerable tension built up over the past weeks and months. But it was more than a little crazy, too—a school where you had to fail to succeed!

"You were told when you first came that you were to learn to be a pioneer," Mattern continued. "You sensed at once that this was an utterly invalid concept, a contradiction of terms.

"A pioneer cannot be trained for his art. Training is valid in the areas of science, exploration, technology and similar categories. But the factors that distinguish the pioneer from the merely competent craftsman in any field are strictly his own—inborn. No amount of training can induce them where they do not exist.

"Our basic problem in TEC is how to determine who is the pioneer and who is not. The vast resources involved in pioneering in the Age of Space demand that a man prove his pioneering nature before he makes a single journey under his own command.

"This we do not know how to do. Yet, while we may not know what pioneering is, we know what it is *not*. So here in the Academy we have carefully assembled everything pioneering is not. Musty tradition, rigid chains of action and responsibility, pre-determined procedures in contacting the new and the unknown. And we tell you, this, and only this, is pioneering.

"We deliberately build up the idealization of TEC and the Academy that exists among the general public. We see that incoming cadets have stars in their eyes, so to speak. Then we throw them against the most rigid means of channelizing thinking that have been discovered in man's long scholastic history. Something has to give!

"If a cadet has no pioneering factors in his makeup, he'll go along with us. But if he's a genuine pioneer, he'll rebel, he'll fight everything we throw at him. And the harder he fights, the more pioneer he is."

Ren protested. "A man might also fail simply because he's a fool, or

lacks scholastic ability. That would prove nothing."

Mattern shook his head. "You may be sure the fools and the simple-minded are screened out long before reaching the Academy Yard. Those who come are the best society can offer.

"And you must not think your companions are necessarily cowards for their reaction on Proteus. They are brave enough as men, but this is not what we were testing. They were trained in ways that are faulty, and we were testing their ability to be so trained.

"A pioneer can be broken, destroyed by excessively severe stimuli, but he cannot be trained as these men have been. This characteristic has been our sole concern."

"And I thought I was testing TEC!" Ren exclaimed in a wave of shamed remembering. "Instead—"

"Let us say you and TEC have tested each other. That was fair enough. And perhaps we can also say that both have passed? You *are* willing to pass TEC now?"

Ren nodded dumbly, not sure whether Mattern was playing with him or not.

"You have shown your ability by rejecting the well-rutted processes of thinking as applied to the unknown," Mattern continued. "Your chance of success as a Free Agent is good. Our methods give us few failures now.

"As you may guess, TEC *is* the Corps of Free Agents. The others always believe they belong, but they never realize what TEC means. They are not a loss, however. Out of their ranks come our needed clerks, colonial administrators, diplomatic agents, our pilots and investigators into known areas and situations. We use all who come to the Academy with adequate technological background."

Ren felt a sudden chill of loneliness and regret. "How many others?" he said. "Will Val—?"

"We expect about six out of this class. You know who they are. Unfortunately, Val Grigsby is not likely to be one of them.

"In order not to betray our methods, you understand it is necessary for you now to return to your place in the class. You will conform from now on, and graduate as Free Agent at the end of the term. In the meantime it will be made known that you have been severely reprimanded and finally reinstated.

"That is all, Ren Cook, of Mars. Again, we congratulate you and wish you long and successful years as Free Agent of the Terran Exploratory Corps!"

He walked alone back through the corridors to the cadet quarters. His mind was a jumble of things scarcely believable even yet. But there would be time enough for sorting them out later. He stood now by the screens, watching the stars that existed beyond hyper-space, and for a moment the loneliness seemed more than he could bear.

But he thought then of the tiny caracks that had once set sail on Earth's oceans, and the lumbering Conestogas careening toward Indian country. He thought of the first tiny, unstable rockets that finally reached the moon. He thought of Jerom Hyle of Mars.

No, it wasn't really true that he was alone, even though there were so few of his kind in any one generation. They were all his friends, the men in the caracks and the Conestogas, and he was a member of the best company in all man's wide Universe!

THE END

THE ANALYTICAL LABORATORY

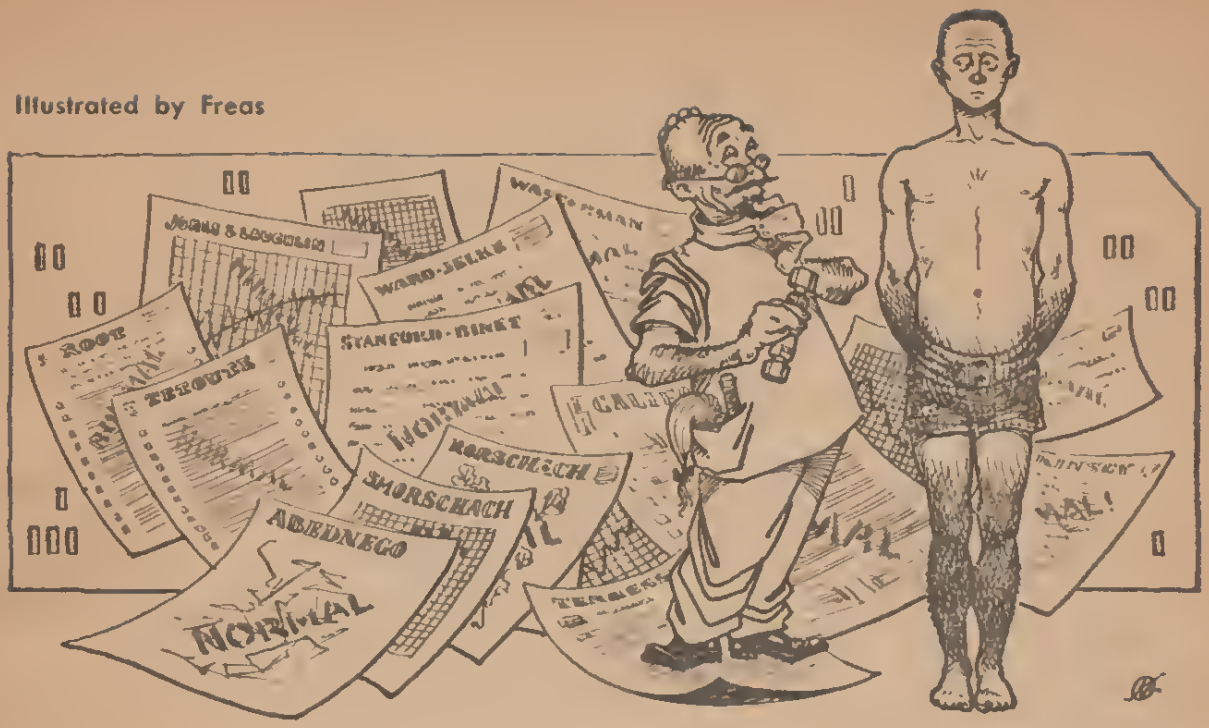
Brass Tacks can never give a full, fair sampling of the letters received; this month it's further off than usual. We received approximately five hundred letters in response to the editorial "The Science of Psionics"; the response was extremely powerful. It was, also, literally unanimous; every letter was in favor of running articles on psionic machines. And, incidentally, I can't possibly answer all the letters asking for information on the work, "if you decide not to print such articles." We're going to print them. The first, now in the works, is a discussion of the Hieronymous machine, and I'm doing that one myself. I got the patent from the United States Patent office. Following the patent, I built one. It did things. The detailed circuit diagram, with specification of materials and component values, and discussion of results, will constitute the first article. There is no discussion of why it works; I don't know.

Now as to the report on stories: Heinlein—surprise! surprise!—takes the 1¢ bonus for first place with Part I of "Double Star." Mark Clifton's delightfully wacky "Clerical Error" took second. This was a six-story issue, so point-values run higher than usual.

PLACE	STORY	AUTHOR	POINTS
1.	Double Star (Pt. I)	Robert A. Heinlein	1.60
2.	Clerical Error	Mark Cliftoon	2.57
3.	Silent Brother	Paul Janvier	3.32
4.	Last Thousand Miles	Dean McLaughlin	3.82
5.	The Prisoner	Christopher Anvil	4.03

THE EDITOR.

Illustrated by Freas



THE ABNORMALITY OF BEING NORMAL

You think, maybe, you know what "normal" means, huh? One thing we can guarantee: whatever you think it means before you start this item—you won't like that definition when you finish. Or, for that matter, any definition...!

BY ISAAC ASIMOV

A common catch-phrase is the one that goes: "There is no such thing as a normal person." This is comforting to all science-fiction fans since it enables us to stand right up to any critic, stare him firmly in the eye, and say, "You're another,"—or maybe just spit in said eye.

The question, though, is this: "*Why* is there no such thing as a normal person?"

We'll get to that.

People sometimes say, with a certain smugness: "A normal person is like a perfect gas or absolute zero; a useful abstraction that doesn't exist in actual reality."

This has the virtue of placing psychology on a kind of par with the physical sciences, but doesn't help explain *why* a normal person doesn't exist in actual reality.

We know why a perfect gas doesn't exist. A perfect gas is one in which the individual molecules are assumed to occupy mathematical points and to have zero volume. It is also one in which the attraction of neighboring molecules for one another is zero. When these criteria are met, the behavior of a gas can be readily calculated from a few basic assumptions, some geometry and a bit of statistical technique. In this way, certain neat and orderly "gas laws" are evolved.

Unfortunately, however, the molecules of all actual gases invariably take up a certain volume. Small as they are, they are never mathematical points. Moreover, molecules always have some attraction for their neighbors. Sometimes the attraction is minute, but it is never zero.

Both facts gimmick the gas laws. In order to account for the behavior of actual gases, physical chemists have learned to make empirical allowance for the manner in which actual molecules fall short of the "ideal."

The behavior of any actual gas can be made to approach an ideal gas. If a gas is placed under very low pressure, its molecules move apart. As they move apart, their attraction for one another decreases. The volume of the individual molecule, moreover, becomes so small compared to the space between molecules, that the individual molecule can be considered more and more as a simple point. In this way, the conditions of the perfect gas are approached. (The same is true if the temperature of a gas is raised.)

An actual gas becomes a perfect gas at zero pressure. Unfortunately, at zero pressure the molecules are at infinite distance from one another and we have no gas at all, only the very best vacuum.

A perfect gas is, therefore, a "limiting condition." It can never be actually reached. It can be approached asymptotically (fancy word for: you - can - get - closer - and - closer - and - closer - but - you - can't - ever - quite - reach - it) but only asymptotically.

Now for absolute zero.

Absolute zero is the temperature at which all molecular motion ceases. In actual practice, it is impossible to reach that temperature. Temperatures as low as a few thousandths of a degree above absolute zero have been reached but that is no sign that the goal is within sight. It is hard to get from 4 degrees above absolute zero to 2 degrees above. It is just as hard to travel from 2 to 1; equally as hard to go from 1 to 0.5; again as hard to go from 0.5 to 0.25 and so on.

Again, we have a limiting condition that can be approached only asymptotically.

Now we get back to our "normal" person. If the normal person were like a perfect gas or absolute zero, it, too, might represent a limiting condition of some sort, a limit which could be approached but not reached.

We can easily imagine one sort of limit of human behavior. We can think of a human being who is incredibly strong, incredibly wise, incredibly virtuous, incredibly all-that-is-praiseworthy, a superman, a god-like creature. But this is no "normal person"; this is more like an "ideal person" and we can see quite plainly that a man so incredibly this and that is also incredibly scarce.

You can see that the adjectives used for these limiting abstractions are very suggestive: "perfect," "absolute," "ideal." Adjectives such as that *fit* unreachable limits.

But how then does the word "normal" come to be applied to something which seems to be an abstraction? The word "normal" is synonymized in the dictionary by such words as "common," "natural," "ordinary," "regular," "typical," and "usual." When we say that a normal person doesn't exist, aren't we indulging in a contradiction in terms? How can something which is common, natural, ordinary, regular, typical and usual not exist?

Well, then, what is a normal person to a psychologist? He is the sum of the million and one—or is it trillion and one?—individual characteristics that go into the making of a human being. And in every one of these characteristics, he is normal. That is, in the case of every component characteristic, our normal human being has whatever attribute is common, natural, ordinary, regular, typical and usual.

Some of the characteristics are universal. Every living human being breathes, everyone has a heart that beats and so on. In these respects, every living human being is normal.

There are also factors that are not universal. For instance, a person may have an overwhelming urge to kill strangers who have done him no harm. On the other hand, he may not have. The second alternative is normal in the sense that it is common, natural et cetera, but it is not universal. There *are* a certain number of people who have uncontrollable homicidal drives. To have such a drive is an abnormal characteristic; to not have it is normal. Our "normal person" would, therefore, not have one.

In any given individual, any factor in his makeup can be considered either normal or abnormal. The normal is that which occurs in most people; perhaps in nearly all; in some cases, actually in all. (Mind you, the normal characteristic need not be a particularly admirable one, merely a common one. All people are selfish, to an extent; cowardly, to an extent; stubborn, to an extent; stupid, to an extent. Our "normal

man" would be selfish, cowardly, stubborn and stupid to the normal extent.)

Now, then, if most people are normal in any given characteristic, why are there no "normal people" who are normal in all characteristics?

In other words, if we add common, natural, ordinary, regular, typical and usual characteristics together, why don't we end up with common, natural, ordinary, regular, typical and usual people?

Let's switch, temporarily, from people to atoms, and see if we can find the answer?

The atoms of most elements consist of two or more different varieties that are similar in chemical properties but different in certain other respects. These varieties are referred to as isotopes of that element.

Some elements are split up fairly evenly among two or more isotopes. Some, on the other hand, are preponderantly—but often not entirely—one isotope, with other isotopes occurring only rarely. Now it so happens that of the elements that make up the body, the most important ones fall into the second classification.

At this point, please look at the table.

By "fractional occurrence," I mean, of course, the fraction of the atoms of a certain element—in any random sample—which are a particular isotope. For instance, if we concentrate on hydrogen, then what the table is saying is that out of every 100,000 hydrogen atoms, 99,984—on the average—are hydrogen-1 and only 16 are hydrogen-2.

(Never mind the significance of the numbers that are used to distinguish isotopes from one another. That's not important for our purpose here.)

Put it another way. Suppose you

Element	*Major Isotopes*		*Minor Isotopes*	
	Name	*Fractional Occurrence*	*Name*	*Fractional Occurrence*
Hydrogen	Hydrogen-1	0.99984	Hydrogen-2	0.00016
Carbon	Carbon-12	0.9888	Carbon-13	0.0112
Nitrogen	Nitrogen-14	0.9962	Nitrogen-15	0.0038
Oxygen	Oxygen-16	0.9976	Oxygen-17 Oxygen-18	0.0024
Sulfur	Sulfur-32	0.9506	Sulfur-33 Sulfur-34	0.0494
Iron	Iron-56	0.9157	Iron-54 Iron-57 Iron-58	0.0843

are sitting before a sack of hydrogen atoms which have been expanded to the size of marbles and suppose you are reaching in blindly and taking out any hydrogen atom you touched. The chances are 99,984 out of 100,000 that you would pull out a hydrogen-1 atom. The chances are only 16 out of 100,000 that you would pull out a hydrogen-2 atom.

Under these conditions you would naturally expect to pull out a hydrogen-1 atom at any particular try. If you did pull one out, you would consider the event a "normal" one. Every once in a while, though, you would withdraw your hand and find yourself staring at a hydrogen-2 atom and you could not help but be astonished. It would be an "abnormal" occurrence.

The same would be true for the other elements listed in the table, though not to the same extent as hydrogen. The other elements are not quite so preponderantly one isotope as is hydrogen. Still, even iron is more than 9/10 one isotope and less than 1/10 the other three put together.

Therefore, let's call hydrogen-1, carbon-12, nitrogen-14, oxygen-16, sulfur-32 and iron-56 the "normal" isotopes. The others are "abnormal" isotopes. (Naturally, I'm not implying there is anything morally wrong with hydrogen-2, carbon-13 or any of the others, or anything physically distorted, either. I am simply calling that isotope normal which is the common, natural, ordinary, et cetera one.)

Now let's proceed. Hydrogen atoms don't exist by themselves under ordinary conditions. They tie up in pairs to form hydrogen molecules. You can see, then, that three different kinds of combinations of two hydrogen atoms—three different kinds of molecules, that is—can be formed if the combination is formed in a random manner. A hydrogen-1 can tie up with a hydrogen-1. A hydrogen-1 can tie up with a hydrogen-2. A hydrogen-2 can tie up with a hydrogen-2.

Naturally, most of the combinations are hydrogen-1 with hydrogen-1, simply because there are so few hydrogen-2 atoms present. But exactly what proportion of the hydrogen molecules would be hydrogen-1, hydrogen-1 combinations?

The probability of any given hydrogen atom being hydrogen-1 is the same as its fractional occurrence, *i.e.* 0.99984. The probability of a second hydrogen atom being hydrogen-1 is also 0.99984. Now what's the chance of picking out two hydrogen atoms from that sack of ours and finding them *both* hydrogen-1?

The probability of two occurrences *both* happening is determined by multiplying the probabilities of each occurrence happening individually.

In other words, the probability of any two hydrogen atoms *both* being hydrogen-1—as in a hydrogen-1, hydrogen-1 molecule—is 0.99984 multiplied by 0.99984. The answer to that is 0.99968. That means that 99,968 hydrogen molecules out of

every 100,000 are hydrogen-1, hydrogen-1 combinations. Only 32 out of every 100,000 are hydrogen-1, hydrogen-2 or hydrogen-2, hydrogen-2 combinations.

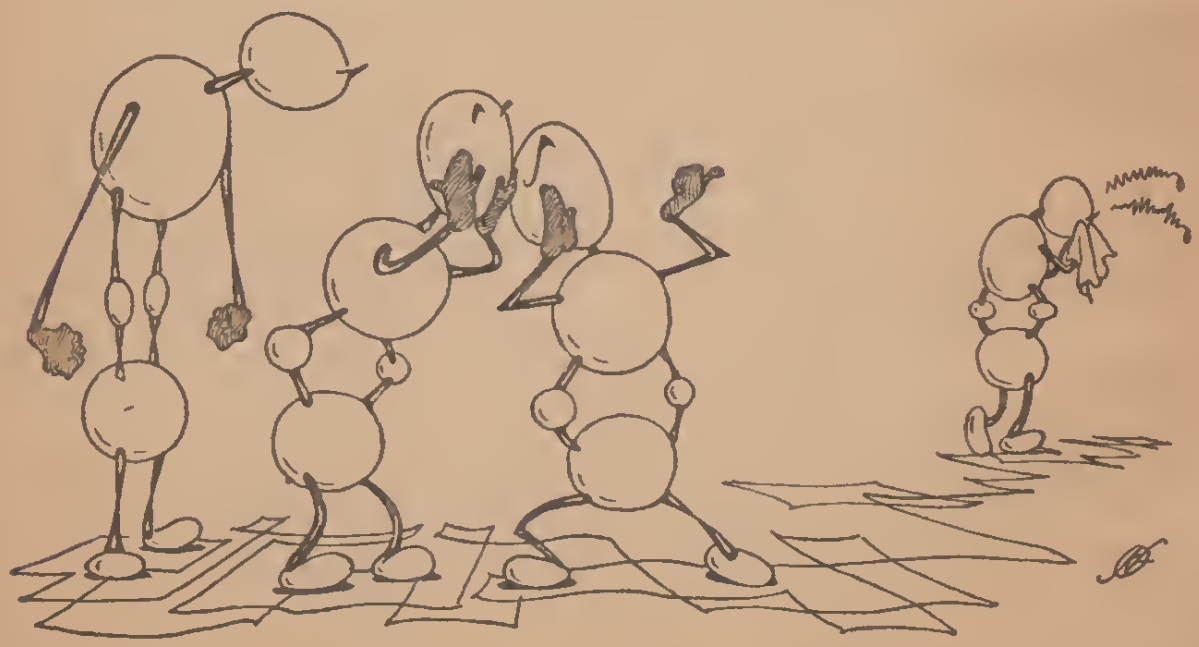
The hydrogen-1, hydrogen-1 molecules are "normal" in the sense that they are the common, natural, ordinary, regular, typical and usual ones. The other types of molecules are abnormal.

We can stop at this point and make a trial definition which may turn out to be a good one or may not. Let's say this: Any molecule is normal if it is made up entirely of normal isotopes. (Notice that this is analogous to saying that a "normal person" is one who is made up entirely of normal individual characteristics.)

Now to proceed. Note that the fractional occurrence of normal hydrogen molecules, 0.99968, is not quite as high as the fractional occurrence of normal hydrogen atoms, 0.99984. This makes sense since a number of the normal hydrogen-1 isotopes are "spoiled" by hooking up with hydrogen-2 isotopes to form part of the abnormal hydrogen-1, hydrogen-2 molecules.

We can also consider this from the standpoint of simple arithmetic. Whenever two numbers less than 1 are multiplied, the product is smaller than either of the original numbers. The closer the numbers are to 1, the less the shrinkage of the product.

If the numbers were actually 1, then there would be no shrinkage. The product would be 1, too. If the probability of the occurrence of hydrogen-1 were 1, that would mean that every hydrogen atom would be hydrogen-1, without exception. They would all be normal. In that case, every hydrogen molecule would be the normal hydrogen-1, hydrogen-1 combination since there would be no other kind of hydrogen to interfere. This is analogous to people being



made up of universal traits only, such as all having pumping lungs and beating hearts.

(In probability problems, all numbers are 1 or less than 1. Since 1 represents universality or certainty, a probability greater than 1 can not be spoken of. What is more probable than the universal or certain?)

Observe another thing about the multiplication of numbers less than 1. If you keep on multiplying them, the products keep on getting smaller. Suppose you multiplied 0.99984 by itself ten times. The answer would be 0.99816. That's the arithmetical way of saying that if you pulled ten hydrogen atoms at a time out of your sack, the chances that all of them would be hydrogen-1 without exception is 99,816 out of 100,000. The chance of finding at least one hydrogen-2 atom in that group of ten is 184 out of 100,000.

Hydrogen molecules are very simple. They contain only two atoms apiece. What if we took a more complicated molecule, such as ethyl alcohol? The molecule of ethyl alcohol is made up of two carbon atoms, six hydrogen atoms, and one oxygen atom.

To find the frequency with which normal molecules of ethyl alcohol—those containing only normal isotopes—occur, we must multiply the fractional occurrence of carbon-12 by itself twice—two carbon atoms, you see—multiply that product by the fractional occurrence of hydrogen-1 six times—six hydrogen atoms—and multiply that by the fractional occurrence of oxygen-16 (one oxygen atom).

The arithmetic would go like this: 0.9888 x 0.9888 x 0.99984 x 0.99984 x 0.99984 x 0.99984 x 0.99984 x 0.9976 = 0.97432. Out of every 100,000 ethyl alcohol molecules, 97,432 are normal and 2,568 are abnormal.

That's a larger number of abnormal molecules than you expected perhaps, but let's go on. Ethyl alcohol is still a small molecule. What if we take a molecule of table sugar which is made up of twelve carbons, twenty-two hydrogen, and eleven oxygens. We have to multiply forty-five numbers together and once that is done, we find the probability of a normal molecule of table sugar to be 0.84748. Out of every 100,000 molecules of table sugar, 84,748 are normal and 15,252 molecules are abnormal.

The normals still have it by a considerable majority, but it is nothing like the preponderance in the case of the smaller molecules. Interesting!

What about larger molecules still? A typical fat molecule contains 57 carbon atoms, 104 hydrogen atoms and 6 oxygen atoms. Multiplying all the appropriate probabilities the appropriate number of times, we come up with a final value of 0.50901.

The truth is, then, that just about half the fat molecules are normal, by the definition of normality we are using. The other half are abnormal.

Now let's pass on to the hemoglobin molecule, the red substance in the blood which absorbs oxygen in the lungs and carries it to the tissues. Its molecule is made up of 2,778 carbon atoms, 5,303 hydrogen atoms, 1,308 oxygen atoms, 749 nitrogen atoms, 9 sulfur atoms and 4 iron atoms. Now, we must *really* multiply and it is at such times that I am most grateful for the existence of logarithms and calculating machines.

The answer to all these calculations is something smaller, as you ought to expect, than anything we've had so far. It is, in fact, 0.00000000000000001134.

This means that about one hemoglobin molecule out of every ten million billion is "normal."

And let's see what *that* means. In a single drop of blood, there are about 250,000,000 red-blood corpuscles. In one single drop of blood, that is. Well, now, if six hundred men pool all their "normal" hemoglobin molecules, they will have enough to fill exactly one (I repeat, *one*) of those corpuscles. That single corpuscle will contain hemoglobin completely free of abnormal isotopes. Every other red-blood corpuscle in every drop of blood of all six hundred men will contain only hemoglobin molecules with one or more abnormal isotopes included.

You see, then, that if we insist on considering a hemoglobin molecule to be normal only when it contains normal isotopes and nothing else, we are going to end up with a "normal" molecule that is neither common, natural, ordinary, regular, typical nor usual. Anything but, in fact.

What we have called a "normal" molecule turns out, as you can now see, to be indeed a limiting case, one which *can* be reached but is not very likely to be except *very* rarely. A hemoglobin molecule can be made up of all normal atoms or, alternatively, of all abnormal atoms. Each is a limiting case. Or else, it can be made up of any combination of normal and abnormal atoms. Those are the in-between cases.

If the limiting case is so rare—the one where all the atoms are abnormal is many-and-many times rarer than the one we have just considered—are any of the in-between cases more common? If so, which is most common, and how do we find out?

Let's simplify once again and take up a case where there are only two alternatives, each of exactly equal occurrence. The most convenient example involves coin-tossing. Here we have heads and tails, one of each, and we can play with those exclusively.

If you throw a coin once—an honest coin, of course—your chance of throwing heads is 0.5 and your chance of throwing tails is 0.5. Fifty-fifty, in other words.

If you throw a coin twice, you may get two heads—one limiting case—or two tails—the other limiting case—or one head and one tail—the in-

between case. The chance of getting two heads is 0.5 x 0.5 or 0.25. The chance of getting two tails is 0.5 x 0.5 or 0.25.

So far, so good. However, the chance of getting one head and one tail is 0.5, twice as good as getting two heads or two tails.

You may wonder why that is so. After all, the chance of throwing a head is 0.5 and the chance of throwing a tail is 0.5 and multiplying them together leaves a 0.25 chance of throwing both. Ah, but you may throw the head-tail combination in either of two ways. You may throw the head first and then the tail, or the tail first and then the head. That gives you 0.25 x 2 or 0.5, as said. Two heads or two tails can only be thrown one way.

The rule is that the probability of limiting cases—all heads or all tails—is obtained by multiplying the probability of one head or one tail by the number of tosses. Period.

For the in-between cases, the probability obtained in this way must be further multiplied by the number of different ways—always greater than one—in which the particular in-between case can occur.

Thus, if you threw the coin eight times, the possible combinations would have the probabilities listed at the bottom of the page.

(These probabilities should add up to exactly 1. They don't. They add up to 0.9906 due to the fact that I rounded off the decimal points, and let the error accumulate. As for the number of ways in which each combination can occur, they can be determined very easily by binomial theorem, which sounds impressive, but isn't very difficult really—or, I assure you faithfully, I wouldn't be able to do it.)

The most frequent combination occurring in eight throws is that of four heads and four tails. To be sure, even that would turn up only a little oftener than a quarter of the time so that it couldn't really be said to be normal. Certainly, though, it is the least abnormal of the combinations.

Now notice that the most common case is the one in which heads and tails are represented according to their comparative probabilities. The probability of throwing a head is 0.5 and that of throwing a tail is

Eight heads	0.0039 x 1 way	0.0039
Seven heads, one tail	0.0039 x 7 ways	0.0273
Six heads, two tails	0.0039 x 28 ways	0.1092
Five heads, three tails	0.0039 x 56 ways	0.2184
Four heads, four tails	0.0039 x 70 ways	0.2730
Three heads, five tails	0.0039 x 56 ways	0.2184
Two heads, six tails	0.0039 x 28 ways	0.1092
One head, seven tails	0.0039 x 7 ways	0.0273
Eight tails	0.0039 x 1 way	0.0039

0.5. Therefore, in the set of eight throws, the most common combination is the one where 0.5 of the throws are heads and 0.5 are tails—four of each.

Without going through any figuring at all, I'd know that the most common combination occurring in a hundred successive throws would be 50 heads and 50 tails. It would be less common than the most common case in the eight-throw problem, occurring only one-tenth of the time. As the number of throws increases, the number of possible combinations increases and the probabilities have to be spread continuously thinner to cover more and more combinations. Still, the 50-50 combination would be commoner than anything else.

Furthermore, if for some reason the probability of throwing a head was 0.9 and that of throwing a tail was 0.1, then we can say confidently, without figuring, that in a total of a hundred throws the most common combination would be 90 heads and 10 tails.

The situation may not always be as conveniently even as that. Suppose that the probabilities are 0.9 for heads and 0.1 for tails and you are interested in sets of 68 throws. Then you pick the whole number ratio that is nearest to the proportion of 0.9 to 0.1. In this case, your most frequently-occurring combination would be 61 heads and 7 tails.

Or suppose you tossed the coin twice. Your most frequently-occurring combination would be 2 heads and no tails. (That's closer to 0.9/0.1 than the next possible combination, 1 head and 1 tail, would be.)

I'm going through all this for a specific reason. I'm going to determine the most frequently-occurring combination in hemoglobin and I don't want to have to use the binomial theorem with four-figure numbers. Logarithms, computing machines and all, it would still be tedious.

But first, I must make one more point. You may have noticed that when two alternatives are of equal probability, as in coin-tossing, the in-between cases—heads and tails mixed—are always more probable than the limiting cases—all heads or all tails.

When one alternative is more probable than the other, however, sets made up of a small number of individual items will show one limiting case—that composed only of the more probable alternative—to be the most probable combination. We mentioned several such. For instance, ten hydrogen atoms drawn at random are all hydrogen-1—a limiting case—99,816 times out of 100,000.

As the number of individual items making up a set increases, however, the in-between cases gradually become more common than the limiting cases, however lopsided the two alternatives are. Hemoglobin, made up of more than 10,000 atoms, has reached this stage even though the probability of the occurrence of the normal isotope—one alternative—is way and gone ahead of the probability of the occurrence of the

abnormal isotope—the other alternative.

For instance, hemoglobin has 2,778 carbon atoms. The frequency of carbon-12 is 0.9888 and that of carbon-13 is 0.0112. Dividing the 2,778 carbon atoms in that ratio, we find that the most frequently-occurring hemoglobin molecule is one with 2,747 carbon-12 atoms and 31 carbon-13 atoms. Using the same system for the other atoms, we find that the most frequently-occurring hemoglobin molecule has also 3 oxygen-18 atoms, 1 hydrogen-2 atom and 1 nitrogen-15 atom. This makes for a total of 36 abnormal isotopes in the most frequently-occurring hemoglobin molecule.

Even this most frequently-occurring combination occurs very frequently. There are something like a hundred trillion possible combinations, so considerable room has to be left for most of the others. (Not for all, though. Some are so rare that they aren't likely to occur even once anywhere on Earth.)

In going back to human beings, now, we have little need to belabor any points. Normal plus normal plus normal-ever-so-many-times does *not* equal normal. It equals highly abnormal, and it is a limiting case.

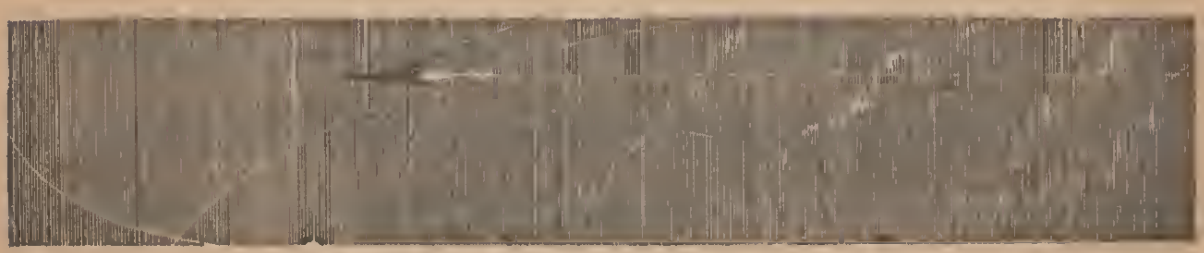
The number of individual factors —physical, mental, temperamental and emotional—making up a human being are so high that no combination can possibly be called normal in the dictionary meaning of the term. All combinations are tremendously abnormal, and if some combinations are a trifle less abnormal than others, the one the psychologists picked, *their* "normal man," is definitely not among them.

In fact, any statistical abstraction involving something as complex as the human being is suspect. However handy such may be in computing actuarial table and predicting elections, it can give rise to great and unnecessary grief through misconstruction by ordinary people in the ordinary business of life.

Still, as long as psychologists use the words "normal" and "abnormal" in the way that they do, we will always be able to make statements like: "It is normal to be a little abnormal" and "It is highly abnormal to be completely normal."

And, as science-fiction fans, such statements, while confusing, are also comforting.

THE END



THEREBY HANGS...

They apparently didn't have cities, and didn't have much in the way of mechanisms . . . but some most peculiar things were achieved, none the less. A contract seemed vital . . .

BY VARLEY LANG

Illustrated by Emsh

It is useless to speculate now concerning the origin of the plague on Glencoe. It was bacterial in nature and it was devastating. Within a month, the entire planet was quarantined. No ship, other than the hospital cruiser, *Vega,* was allowed to land; and all travel from Glencoe was forbidden.

After a year's game but unsuccessful fighting, the desperate survivors left a ruined world without hope of aid or comfort on any other inhabited planet in the galaxy. No one would have them. Every spaceport was ringed with atomic weapons in the event of a forced landing, and the plague survivors were turned away from one federated world after an-

other. They were the displaced persons of the galaxy.

They landed, finally, on a small, bleak planet scanty of resources, inhospitable of clime, and there fought to the death with a recurrence of the plague. They were at last successful. They were still quarantined, though the time was long passed when such a measure was any longer necessary. In some bitterness, yet with a challenge as well, they called themselves D.P.'s, and looked about them for a better planet.

The D.P.'s were thoroughly aware of the fact that their status would be perpetual if the huge galactic monopoly of transportation, the Communications & Supply Corporation, had any say in the matter. For a long time, the former Glencoans had been their only competitor in space supply and transportation. But they were now eliminated, and C & S saw to it that the emergency quarantine remained law. They also guessed the D.P.'s next move, and tried to anticipate them by a wide-flung search for inhabitable planets in a radius extending in all directions from New Glencoe. It was their simple but effective plan "to get there first"; after which, the official quarantine could be used to keep the D.P.'s bottled on their inadequate world.

And so it was that two scouts of C & S with full powers to explore, claim possession of, and exploit in the name of Federated Worlds—always excluding New Glencoe—approached the single planet of a single star. The scouts were also empowered to make treaties with intelligent life forms, if any, and to secure commercial privileges for C & S. They were relieved to find that a rapid orbital survey revealed no native population. They landed on the only logical site, a large natural clearing in the middle of the largest continent.

The planet had little warning. Still, what could be done in the two days during which it was surveyed from orbit was done. On the morning after the C & S scout ship landed, an ambassador with full powers to treat was briefed and sent to the ship. Marty Willows and George Moskins saw him emerge from the enormous forest surrounding the scout ship and walk leisurely across the natural clearing.

Marty said, "I thought this planet was supposed to be uninhabited?"

George joined him at the port through which he was looking. "Inhabitant, hell. That's a man."

Marty picked up a pair of binoculars. "When," he asked, "have you ever seen a man with a tail before?"

The man with a tail made a very impressive figure in the cabin of the scout ship. He wore a simple, pearl-colored, silklike tunic and a pair of trousers of the same material. He stood like a rock, with legs spread slightly and feet planted. The end of his tail was folded gracefully over his left forearm, his right hand resting fisted on his hip. His head was held high, his chest well out.

He looked what he was, the representative of a powerful race conscious of its strength and dignity.

The two scouts had finished examining the ambassador's credentials. They were perfectly in order, as far as they could judge. George blurted, "I don't get it!"

Marty silenced him with a glance. "Mr. Thorn," he smiled, "we are naturally very much surprised. We saw no inhabitants, nor any sign of habitation."

"You," said Mr. Thorn in a controlled but rolling bass, "were not intended to."

"And that," George muttered, "is that."

Marty cleared his throat. "You speak our language perfectly." And, he thought, I don't really believe in that Mardi Gras tail of yours.

As if Mr. Thorn had read his thoughts, the tail uncurled itself gracefully from his left arm and made a decisive, vigorous, brushing-aside motion. "I think," he said, not unpleasantly, "we can dispense with the usual compliments. It is, of course, part of my job to learn the languages of those with whom I am to treat. In this tongue, I was instructed by a representative of a people who call themselves D.P.'s." His tail resumed its official position on his left arm.

A profound silence followed, during which a light film of moisture lacquered George's brow, while Marty's face grew both wary and startled.

"Have your people made any . . . ah . . . arrangments with the D.P.'s?"

"We have encouraged them to colonize."

George said loudly, "But they're quarantined!"

Marty put a restraining hand on his arm. "Only," he said, "on federated planets. What, Mr. Thorn, is the official attitude of your people as far as C & S is concerned?"

Mr. Thorn raised the tip of his tail to a point of attention. "I will tell you in a few words. We have long known that continued isolation would be impossible. We prefer two opposing groups, so that neither will grow too powerful. You will transport what the D.P.'s produce. We will collect import-export duties from you, royalties on basic resources from them. And we will maintain a balance which will be profitable to all of us."

We are up against a sophisticated, intelligent, and practical people, Marty thought. But where are the people?

"You have the basic resources?" Marty inquired.

Mr. Thorn looked at him levelly, with calm, dark eyes. "Would the D.P.'s be interested otherwise?"

The two scouts asked for time to consider the problem and invited him to stay in the ship as their guest. He consented at once.

After a long, anxious afternoon, Marty and George found themselves where they had begun.

"I tell you," George said, "the

whole set-up is a phony. This guy represents the whole population of the planet. All right. *What* population? Where is it? Where are the cities, the mines, the mills, the roads?"

They were quiet for a moment. Something like a sigh stirred the air. It grew slowly in volume, and ended with a thudding crash. A flock of small gray birds came chittering past the open port leading to the ramp.

They looked down the long ramp at Mr. Thorn. He was quietly reading a book in the shade of the ship. Against a light breeze he held the pages down with the fingers of one hand and the tip of his tail. With the other hand, he stroked his chin.

"George, will you go down there and ask that long-tailed wonder just what that noise was?"

George returned, looking a little nervous. "The woodmen are at work."

"Oh sure, George, the woodmen. What woodmen?"

"Some of his people. They're chopping down trees, it seems. He says they use wood for 'a variety of purposes.' " He tried to imitate Mr. Thorn's deep voice.

"Did you hear an ax?"

George shook his head.

"Or a saw?"

"No."

"Did you see smoke from a heat-slicer?"

"Damn it," George said, "here we go again."

For the rest of the afternoon they watched the forest with high-power glasses. They saw several giant trees tremble, totter, and fall. They were being felled in narrow, sinuous lines, unlike any normal pattern for timbering they had ever heard of. And not once did they see a woodman.

After some casual conversation, they brought the subject up at lunch the next day.

"Mr. Thorn," Marty said in his most winning manner, "we have examined a planet which contains no houses, cities, roads, mines, mills, or bridges. And this afternoon, we watched your people, woodmen, at work; and we did not see your people. We are very curious."

"Curiosity," said Mr. Thorn, "is the first sign of intelligence." His deep voice was pleasant, even friendly.

Marty said, "Thanks, but about the other matter?"

"Mr. Willows, your culture uses a good bit of glass for various purposes?"

Marty assented.

"Have you ever, by chance, watched a small, winged insect battering his head against a piece of glass? He knows there is nothing there, because he cannot see it. And yet, if he persists, if he insists there is nothing there, if he goes on battering his head against nothing, he will be found on the floor in the morning. He will be on his back. His little feet will be in the air. Yes?" The tip of his tail shot up to illustrate the little feet. "He will be dead." The tail tip lay limply, quite

dead, on the edge of the luncheon table.

Marty laughed with forced heartiness. His face was a shade paler than usual. George said, "Do you mean to say that you people can make . . . that all this . . . that you can't see it?"

Mr. Thorn then did something which had disconcerted them before. An ambassador is supposed to speak, even if he lies, evades, or merely speaks words. He said nothing. He looked George in the eye, calmly, and he said nothing at all.

Marty said to himself: C & S should have thought of a trick like that for scout training, if it is a trick. That look implies, I could tell you something very, very surprising, but I don't believe I will; we are wandering from the subject.

After lunch, they enjoyed the mild air and abundant sunlight on a balcony overlooking the ramp. In the middle of a silence rather strained on the part of the two scouts, serene and relaxed as far as Mr. Thorn was concerned, a small message rocket screamed over the ship and disappeared rapidly.

George gulped. He asked, somewhat stupidly, "Wasn't that a message rocket, Mr. Thorn?"

Mr. Thorn smiled. "We have occasion to send messages from time to time."

George said, "And it was visible?"

"Please," Mr. Thorn said, "I do not wish to be rude, but I am puzzled at times. You see, for example, a message rocket. And you ask if it is not a message rocket. It is visible, for you have seen it. Then you ask if you have seen it. Other things you do not see, and you say, this I do not see, and that. It is obvious, is it not? But perhaps our minds are . . . what is the word?"

"Geared," said Marty.

"Thank you. Geared a little differently?"

He begged to be excused. He went to the foot of the ramp, sat down in the shade, and resumed his reading.

Marty said, "Obvious, is it not?"

George groaned. "Do you realize just how delicate processing and tooling, how much complicated machinery, how much preparation of raw materials goes into *one,* just *one* message rocket?"

Marty said he was beginning to see what old long-tail meant about being obvious and George cursed the empty forest, where, at the moment, no trees were falling. But the sky fell, or seemed to. The ship trembled violently under their feet. A blinding flash of light far off over the forest was followed by a grumbling, grinding explosion that seemed endless. A huge column of smoke and vapor boiled upward in a monstrous mushroom. Mr. Thorn was seen to glance idly at it for a moment. He went back to his book, after flicking a page over with his tail.

Marty swallowed painfully. There

was a cramp in his hand from gripping the edge of the port.

"All right, George," he said.

George tottered down the ramp. When he came back, Marty asked, "What is it this time, George? More woodmen?"

"No. Mining operation."

"What do they do, blow the top off a mountain to get a spoonful of germanium for transistors?"

"Something like that. Expose the veins," he said.

"Expose the veins. What about our veins?"

"Fall-out? He said not to worry, Marty, all necessary precautions have been taken."

"That's good. That's grand. Get old long-tail in here, just the same. Lift that ramp and close up tight. I'll start the air circulators."

Long before breakfast the next morning, Marty got into a lead suit, picked up a counter, and lowered the ramp. He came back a half hour later. George met him at the port and watched him strip.

"What's the count?"

"George, there's fine fall-out all over the ship, all over the ground."

George grunted.

"George, I want you to listen to this. Are you listening?"

"Let's have it."

"There isn't any count."

"What!"

"No count."

"You checked—?"

"I checked the counter. It works. There just isn't any count."

George said, softly, "The necessary precautions."

Marty turned to the ramp. "George, we're going to check that forest. Trees are being felled again. Those people have got to be there, and we're going to find them. Come on!"

It was not exactly dark in the forest, but neither was it light. It was a kind of misty green. All through it ran hip-deep, narrow waterways. At a distance, they heard a tree fall, a big one. They made off along a runnel, breasting a thick, fernlike brush. A long sigh filled the air and a tree crashed fifty feet in front of them. Splinters, leaves, and small branches rained about them. Marty was halfway to the fallen giant before George recovered from shock. He found his companion perched on the fallen bole and staring at nothing. George looked carefully around. There were no woodmen. There was no one at all but Marty. A slow, icy crawl began at the back of his neck and slithered to the top of his head.

"Marty," he whispered, "let's go back."

They did, and on the way were twice almost crushed under falling trees. They stopped long enough at the base of one to see that it had been cut cleanly in a perfect taper by some kind of toothed machine. They never saw the machines, nor the woodmen.

Marty thought of the fly that kept battering its head against the pane

of glass, and he saw its little feet stuck up in the air, quite dead.

They got back just as Mr. Thorn came from his room to the cabin. They said nothing, either about the trip in the forest or the negative fall-out. They merely waited for the planetary ambassador to go on with improving his mind at the bottom of the ramp. Not, Marty was willing to admit, that it needed much improvement.

"George, I'm scared spitless."

George said it was about time.

"Let's see what we've got here, exactly what we've got. Take the negative side first. We haven't been feasted, or fallen over, or fawned upon. On the other hand, we haven't been threatened, either. No one has tried to steal the ship's armament."

"A few trees damn near wiped us out."

"Do you think that was meant for us, George?"

"No," George said uncomfortably. "We were just—in the way."

Marty nodded. "Complete indifference. No threats. What does that mean to you, George?"

"It means we're scared and they aren't."

"What a thing of beautiful precision that mind of yours is, George. Why aren't they scared, even anxious?"

"You tot up that positive side, Marty, and you'll come up with the answer."

"Right. What do they have? They have a big, fertile, beautiful planet full of natural resources. Somehow, some way, they rearrange molecules . . . oh, hell, I don't know how they do it. The pane of glass."

George nodded.

"And they work on a big scale. They blow the top off of a mountain with fusion or fission stuff, *and*—no radioactive fall-out. Quite a trick, eh, George?"

George stuttered.

"Can we do those things, George? See why I'm scared. And what else can they do, granted that as a start? We don't know, and we're not going to stay to find out. We're going back to headquarters, and we're going to be top secret on Earth for quite a time to come—I hope."

"Can we leave?"

"I don't know. But we're going to sign that agreement, D.P.'s or no D.P.'s. Then maybe we can leave. It's the only chance we have."

The treaty was signed that morning. At a distance from the ramp, two indelibilized copies were slotted into the pair of galactic homing messengers, one headed for Earth, the other for New Glencoe. Mr. Thorn held the third copy in his hand. He said, "I see you have a tape of our talks?"

"Yes, it was standard procedure," Marty said.

"All of it? Informal and formal talks alike?"

"All of it."

"May I have a copy?"

"Sure. We always triplicate. Matter of fact, it might be a good idea

to include a talks tape in each homing messenger. You agree, Mr. Thorn?"

He appeared to hesitate a few seconds, then consented. Marty felt that the talks tape would go a long way at headquarters toward explaining why the treaty was signed. That and the treaty itself would set in motion the machinery that would lift the D.P. quarantine, since the terms of the agreement could not otherwise be met. And Marty felt that Federated Worlds would be glad to have men, even D.P.'s, on this potentially dangerous planet.

The messengers were sent. In the cabin, Marty checked them through the atmosphere and into space by the tracker. There was no interference of any kind. They were both definitely on their way, beyond recall. One of the greatest commercial and galactic concordats of the century was an accomplished fact.

When he turned from the tracker, the first thing that Marty saw was Mr. Thorn's tail. It was lying on the treaty table. Mr. Thorn eyed it with mild interest.

George said, "It . . . it came off!"

"To put the matter more accurately, I detached it." Mr. Thorn stood with fists resting lightly on his hips, his legs slightly spread, his feet planted.

"You are a D.P. scout," said Marty flatly.

Mr. Thorn inclined his head. Marty moved swiftly to the table. He hit George in the neck. The burn gun clattered to the table top. The planetary ambassador made no move to reach for the weapon. Marty picked the gun up and held it loosely in his right hand.

"Sorry, George."

George shook his head and rubbed his neck. "Go on," he croaked.

"I assume, Mr. Thorn you have reasons for thinking we will not burn you down."

"You are a shrewd, swift man, Mr. Willows. I was counting on that at the end. You are perhaps too swift, a shade too perceptible. A razor's edge will sometimes cut the wielder."

Marty did not move. His face was white, alert. "What is the population of this planet, Thorn?"

"One."

"I think it will soon be zero. But first you will explain. The woodmen?"

"There is an extinct mammal on Earth called the beaver."

George groaned and half raised himself from his chair.

"The runnels!" Marty said.

"Yes. Before a short but intense rainy season, which is due now in a week or two, these animals go up the runnels to fell trees. After the rains, that part of the forest is under water. They prepare for this change. The water in the runnels and the fern brush hides them. In any case, you were looking higher for tailed men, not lower, for tailed animals."

"A toothed machine," said Marty grimly.

"And luck," George put in.

"No. You make luck. The atomic explosion?"

"A volcano. Periodic eruption. It was assisted by small, timed charges. Half the wall plugged the main vent. I must admit the blowup was far more, well, dramatic than I had expected."

"And I suppose the messenger was placed and timed beforehand?"

"Yes."

Marty lifted the burn gun. "And now you will tell me why I am not going to use this."

"I will. A broken treaty is tried in Federated Courts. The D.P.'s will hire the best of legal talent."

"They are quarantined."

"Only as far as orbit, from which clear communication is easy, as you know. However, the case will not be tried."

Marty lifted an eyebrow.

"C & S takes itself very seriously, Mr. Willows."

"You mean the slogans? Such as, Others Make Mistakes, We Make The Takes?"

"It is true, just the same, that they have created for themselves a serious reputation of near infallibility. Think, Mr. Willows, the case tried in open court, the eager public, every form of news distribution in the worlds. The evidence for coercion and false representation is presented: an invisible civilization, a pane of glass, invisible woodmen who are a rather large species of beaver, atomic fall-out which is a little volcanic ash. And my tail. I will have to explain its operation: a tiny heat engine operated by body heat, a Wade convertor, a minute transistor, controls sewn in the clothing. I will be forced, as part of the evidence, to demonstrate its use. It would look well over visi-news, yes? C & S would defend the case ably, they would have an answer for everything, everything but laughter. A belly roar would go up from one end of the galaxy to the other."

Marty put down the gun.

"You know, Mr. Willows," Thorn continued, "that C & S will make handsome profits from the agreement?"

"Yes," said Marty. "That little heat engine alone—"

"Though I don't suppose you would use them for caudal appendages. And there are other devices. I need hardly add that galactial patents are pending."

"What guarantee have we that you will not build up a transportation group of your own again?"

"None. But you realize that establishment on a new planet, development of its resources—all that takes time. You will meet the problem when it arises."

"We will." A ghost of a smile turned the corners of Marty's lips. "The agreement stands. You're good, Thorn, damn good."

Coming as from one expert scout to another, the praise was high indeed.

THE END

THE REFERENCE LIBRARY

BY P. SCHUYLER MILLER

THE MEN OF SPACE

I don't recall how long ago it was that John Campbell pointed out editorially, in these pages, that the men who will lift us off the Earth are living and working among us now. Only a few of them come now and then into the glare of the spotlights: by and large, the books on rockets, such as Willy Ley's classic "Rockets, Missiles and Space Travel" and his "Conquest of Space" with Chesley Bonestell or the parallel series for Viking Press with Bonestell and von Braun, have been historical or technical studies. Dornberger's "V-2" was a striking exception, the personal story of a struggle against Nazi bureaucracy and fanaticism, but even it dealt more in events than in personalities.

Now, at last, we are beginning to be introduced to the men of space. Three books in the last few months have taken this approach; the newest, I think, most successfully.

In "Men, Rockets and Space Rats" a former reporter and present free-lance writer, Lloyd Mallan, has used a good reporter's skill deftly and well. (The book, published by Julian Messner, gives you 335 pages, solidly packed, for $5.95.) I'm sorry

to say I know nothing about his previous writing in this field: he is obviously just the right man for the job he undertook. With full, close co-operation from the military, he spent more than a year and traveled eighteen thousand miles from base to base to watch and photograph our rocket and guided-missile program in action. He admits that what he saw but could not describe would fill an even larger book, but this one is enough to stop the reports that we are sitting on our hands while the Soviet world gains the Moon and Earth.

In every post and laboratory, Lloyd Mallan probed behind the technical jargon and military details to find and bring out the human story of the men who devise and build the rockets, who test them with their own lives, and who are learning to rebuild the human body for life in space. He used a Dictaphone to record their stories in their own words, and not the least interesting to us is his final chapter of conflicting opinions on the present rocket program as a ladder to the Moon—and beyond.

Through it all, the author held hard to the newsman's practiced objectivity. He keeps himself entirely out of his book. Two unusual photographs show the pilot of a C-47 floating in midair as the plane loops into a zero-gravity arc above the Ohio countryside. Mallan took the pictures; he must himself have experienced the sensations of weightlessness; but what we hear about it we hear from other men.

It's a book full of drama and suspense—the sudden horror of Major Chuck Yeager's realization that at seventy thousand feet above the California desert he was absolutely helpless to control the bucking, tumbling rocket-plane he was testing—the harrowing experience of spinning like a discus, seven miles up, and "swimming" your way to control of your motion—the chase of a stratosphere balloon tracked at last by hunting for "flying saucer" reports. You'll discover the importance of ordinary onions to the study of cosmic rays, and you'll find full credit given to the dedicated laymen of depression years whose shoestring tests at last gave birth both to the American Rocket Society and to Reaction Motors, Inc., the spit-and-cinders outfit that gave us the Vikings.

And you'll find the whole "Viking Rocket Story" told a little less skillfully, a good deal more technically, by the man who headed the scientific development of the Viking, Milton W. Rosen. It's a Harper book: 242 pages, profusely illustrated with official photographs, for $3.75.

Aside from the fascinatingly detailed account of the struggles to launch each new rocket, the point that the reader cannot fail to get from Rosen's book is the hairline balance between success and failure, governed by seemingly trivial mechanical or electrical details. If ever

a book deflated the "up and awaaaay" school of careering around space in rocket hot-rods, "The Viking Rocket Story" does it. We know now how to get into space—but we haven't the know-how to do it. This, Dornberger's "V-2" and Mallan's "Space Rats" belong up there with Ley and the others.

Looking backward again, Beryl Williams and Samuel Epstein, gave us a collection of biographical chapters under the title "The Rocket Pioneers on the Road to Space" (Julian Messner, 241 pages, $3.75). These are the stories of Congreve, Jules Verne, Ziolkovsky—the Russian pioneer so little known in the West until now—Goddard, Oberth, the amateurs of the German and American rocket societies, and finally the flowering of the V-2 program at Peenemunde. The American program is left to Mallan's book: they are companions, not rivals.

I'm inclined to think that if you are building a rocket library, you will have to have all three books, and certainly Rosen's and Mallan's. They're both books you can recommend to teen-age enthusiasts, too: no punches are pulled, and rocketry is shown as the tough, merciless personal and scientific warfare it really is. The road to space is hard—but the men of space are harder.

* * *

Last year I told you about Donald Tuck's "Handbook of Science Fiction and Fantasy," a product of Tasmanian fandom. The other day the mail brought in another ambitious undertaking from the other side of the world, the German Science Fiction Club's checklist of science fiction books in German—original and translations — "Die Zukunft im Buch"—"The Future in Books." It's a sixteen-page well mimeographed pamphlet with an unusually good cover sketch of a BEM and an engrossed spaceman.

The list opens with a publishers' directory. The books are listed alphabetically by author, and cover mainly the more recent titles. I can't believe, for example, that only two Wells titles, four of Verne's and two of Burroughs' have been translated into German. Obviously, data on older editions just didn't come into the hands of the German fans who have compiled this list. I hope collectors in other countries will come to their aid and help expand the list for another edition.

There's a small section of "related" books such as the ones I've just been describing, and a list of thirty titles in the "Utopia-Grossband" series, which appears to be a German SF library with a good many British and some American writers represented.

The list costs only twenty-five cents and is worth more to any serious collector. Your quarter should go to:

Walter Spiegl
1 Platterstrasse
Niedernhausen/Ts
Germany

How to send it I can't tell you: check the post office for the limitations on international money orders, as the obvious possibility. For that matter, United States coin is welcome anywhere abroad and I don't know of any restrictions against spending it overseas, so why not glue your two bits good and tight to a card and enclose it in a tough enough envelope so that the coin doesn't break out?

* * *

And it's by no means too late—or too early—to send your $2.00 for membership in the 14th World Science Fiction Convention, to be held in New York over the Labor Day week end. Reports are it's to be at the Waldorf-Astoria Hotel, which leaves me a little less enthusiastic than before after the swell hospitality a less pretentious place, the Manger, gave us in Cleveland. Still, New York's a big place, and you don't have to stay in the convention hotel if your budget is limited. I was a sort of archeo-neofan in Cleveland; maybe I'll be reckoned of age in New York. Your registration fee, of course, gets you a running barrage of advance information so that you can plan your week end to get the most out of the most. Send it to: 14th World Science Fiction Convention, P.O. Box 272, Radio City Station, New York 19, N. Y. (add U. S. A. if you live on Mars: we'll be adding "England" for '57).

THE LONG TOMORROW, by Leigh Brackett. Doubleday & Co., New York. 1955. 222 pp. $2.95

Here is by all odds the best science fiction *novel* of 1955, unless something unforeseen turns up in the last two months of the year. Whether it will be voted the best science-fiction *book* of the year is another question: I have a feeling that something with more plot and melodrama may get more votes.

The distinction, of course, is the traditional literary one. A book-length story may be so many words to an editor trying to fill his pages; it may be a challenging concept or exciting action acted out by puppet characters as memorable as Tarzan or John Carter. Most book-length science fiction falls into this latter category. But a novel should be more: it should create personalities and show the reaction of those personalities to the circumstances of their life, their growth or decay, their humanness. The single fault in Edgar Pangburn's immensely warm "Mirror for Observers" is that his aliens were almost more human than his human beings.

Now, from a writer whom we have come to recognize as the past-mistress of swashbuckling color and action on a galactic scale, we have a true novel which expresses her own personality in a way her space-and-time-opera never has. We have a plausible, understandable future created almost without gimmicks, out of the resurgence of our own

past, and we see a boy, Len Colter, torn by his revolt against an authority which shuts out the good of the past and prohibits the possibility of a good future in which change is permitted to exist.

The thesis—and you'll find it set out logically in Harrison Brown's "The Challenge of Man's Future"—is that after an atomic war mankind will be battered back to an agrarian existence. Miss Brackett takes one more very logical step: in a world without cities, the people best able to succeed will be those who have never accepted the cities and our society of entangled interdependence. In this country they are the "Plain People," the Mennonite and Amish farmers of the author's own Ohio and western Pennsylvania countryside, able to carry through almost without change their life of symbiosis with the countryside. (In the Southwest, I suspect, it might be the Navajo sheep-herder; in the Arctic, the Eskimo; in Asia and Africa the Bedouin, though these are no part of "The Long Tomorrow.")

Still, most of humanity has been put through the fire and torture of the city-bombings, and in hysteria and revulsion has reacted by prohibiting cities and the things of cities, in law, in religion, and in the new culture. The blend is the society of which Len Colter and his cousin Esau are a part, and against which they react. There are rumors of "Bartorstown," a kind of lost world of city-things and city-ways against which all Good Men are united—and when the boys encounter what seem to be clues which will lead them there, they cannot resist. How they find their goal and what it does to them is the story.

This is the kind of book you would expect from Jessamyn West on the basis of her warm stories of the Quakers, "The Friendly Persuasion." Instead, she gave us the clumsy, artificial "Little Men" in "Star Short Novels" and the science fiction she should have written comes from an old friend, one of the family. It's better this way—much better.

NO BOUNDARIES, by Henry Kuttner and C. L. Moore. Ballantine Books, New York. 1955. 151 pp. $2.00; pb 35¢

The lack of Moore-Kuttner stories has been one of the major shortcomings in the recent course of science fiction and fantasy. We've had collections of older stories like this one, but next to nothing new. Maybe now the tide has turned, for one of the five stories in this book was published in 1955—"Two-Handed Engine," from *F&SF*—and a second, "Home There's No Returning," seems to be written for the book.

The best of the five is a classic after ten years. It's "Vintage Season," published here in 1946, in which tourists from the future come to a small American town to enjoy the May which, to their tastes, is the finest in all time. "The Devil We

Know" is a fantasy from the August, 1941 *Unknown*, in which Gerald Carnevan, like many another before him, is trapped into a one-sided bargain with a demon.

"Home There's No Returning" is the new story on the philosophy of robotics. EGO, Electronic Guidance Operator, must be perfected to provide defense against a last, and probably final enemy onslaught. But when it is activated, the robot runs amok in a strange, blind quest. "Two-Handed Engine" is another story of the relationships between Man and Machine, in a culture where Man's conscience has been replaced by blind, avenging metal Furies which track a murderer infallibly to his death.

Finally, there's "Exit the Professor," one of the least of the frequently hilarious and always outrageous Hogben stories. Perhaps it was selected because it explains more about the history of these mutant hillbillies, hiding their weird powers through the centuries, than any of the others. This one shows Saunk and the others running off a snooping scientist. I don't know whether there's enough variety in the series to stand up under separate publication, but I'd like to see 'em all together and find out.

THE GIRLS FROM PLANET 5, by Richard Wilson. Ballantine books, New York. 1955. 186 pp. $2.00; paper 35¢

This is a pleasant time-passer with just about every ingredient of sf stirred together. It is, in the first place, a mildly satirical picture of an American matriarchy at the end of our own century, when women have taken over at every level from the home to the Presidency, and only Texas remains a stronghold of free male supremacy.

It's an invasion-of-Earth yarn, for the flying saucers from Planet 5 of the seventh system peopled thousands of years ago from Earth are certainly not just sight-seeing.

It's a mystery-within-a-mystery yarn, for the gorgeous Lyru warriors in their aluminum bikinis are accompanied by strange machines —or are they creatures?—which can read and control minds.

Dave Hull, the hero, is a newspaperman who sought refuge from "Biddieland" in Texas when his girl was made his city editor. Shortly afterward, Texas becomes the center of the Lyru invasion, and Dave is up to his ears in the service of fabulous Sam Buckskin, epitome of all Texans. He captures one of the beautiful invaders when a scout-ship crashes, is in turn captured by her and taken aboard a larger ship, helped to escape again . . . and so the fun continues. I don't think I'm going out of my way to buy the hard-cover edition, but maybe Hollywood will leap at the opportunity to do a musical free-for-all of six-foot glamor-girls, flying saucers, and super-cowpokes. They could do worse.

THIS FORTRESS WORLD, by James E. Gunn. Gnome Press, New York. 1955. 216 pp. $3.00

This is a van Vogtian melodrama of interwoven plottings in the far future, which somehow doesn't quite achieve the van Vogt tension and plausible implausibility.

William Dane is an acolyte of a highly artificial state religion which is one of the four powers balancing precariously in a galactic culture: Church, Nobility, Free-Traders, and the deadly black-uniformed Mercenaries. Presiding at a mechanized service, he sees a girl hunted into the cathedral by Mercenaries and mercilessly cut down after she has dropped a simple quartz pebble into the offering. Retrieving the pebble, and struggling with personal conscience against authority and teaching, Dane finds himself up to his neck in an ambiguous undercover battle for the talisman and its supposed powers.

Plenty happens, but the secret of the pebble seems rather flat and Dane himself never becomes very convincing. It's hard to say why: the ingredients are all there, and the cooking seems adequate. Must be that Grandpa had a secret sauce . . .

NIGHTMARES OF EMINENT PERSONS, by Bertrand Russell. Simon and Schuster, New York. 1955. 177 pp. $3.00

If he could write fiction, this eighty-three-year-old philosopher, whose serious work brought him a Nobel Prize, might be a candidate for the mantle of Swift. But he pours on his satire with an overlavish hand and very little condescension to subtlety.

The book is made up of the ten "Nightmares" and two satiric novelettes of the future, which are its reason for being considered here. Three of the former may also be considered variants on the Russell prognostication of a future compounded of totalitarianism and insanity: "Eisenhower's Nightmare," in which Stalin and McCarthy agree to divide the world between Russian and American spheres of benevolent dictatorship and non-aggression; "Dean Acheson's Nightmare" — "The Swan Song of Menelaus S. Bloggs"—which suggests an alternate course which ends in American dissolution; and "Dr. Southport Vulpes' Nightmare," a little fable in which master minds from both sides of the Iron Curtain achieve a final stability in eternal robotic war.

The longest of the stories is set in the far future, some five thousand years hence, when an Inca-ruled, Peruvian-based, Amerindian civilization has taken over the world. "Zahatopolk" is the name of the heaven-descended founder of this civilization, regimented and ruled by formula to its last ingredient. As far as story content goes, it is the inevitable tragedy of the young girl, Diotima, who dares to question the teachings of the College of Indoc-

trination and to rebel against the bright reward of being raped and eaten by the Inca as ceremonial Bride of the Sun—and of the revolt of reason which followed her death at the stake. But the manner and style are closer to 1900 than 1955.

"Faith and Mountains," the closing story, is a heavy-handed satire of the conflict between two great religious forces: the Molybdenes, founded by Molly B. Dean to teach the Great Truth that a diet of the molybdenum she owns will cure anything, and the Northern Magnets, launched by Sir Magnus North to promote his spiritual health center at the North Magnetic Pole. I don't know about the presence of Molybdenes among us, but I've met Magnets who insist on sleeping due north-and-south.

It's too bad such stories must seem so stiff and forced; there's the material of innumerable "Space Merchants" in them, if Lord Russell could only get it out. But I'm sure he couldn't care less whether they meet our likes or not.

MOONRAKER, by Ian Fleming. Macmillan Co., N. Y. 1955. 220 pp. $2.75

I don't know how you feel about mysteries, but I love 'em and occasionally—as in the grand old days of Sax Rohmer, Edgar Wallace, and E. Phillips Oppenheim—they'll have a science-fiction theme. Here's one, about the attempt to interfere with the giant long-range rocket, *Moonraker,* which England will launch on a trial flight just a little while from now. Secret Service agent James Bond goes to tighten up security, after a predecessor is murdered. Scotland Yard has the beautiful Gala Brand on the spot, posing as the secretary of the mysterious war-hero billionaire, Sir Hugo Drax. It's smooth, fast, tight in the best English style—just the kind of thing Alfred Hitchcock should film back home on the cliffs of Dover.

ALIEN MINDS, by E. Everett Evans. Fantasy Press, Reading, Pa. 1955. 223 pp. $3.00

This is the second book in the series which began with "Man of Many Minds." George Hanlon, secret operative extraordinary, cannot only read minds but can control them —or at least those of the lower animals. As such, he is on the planet Estrella, trying to uncover the forces behind a plot to discredit the Federated Planets and their bid to Estrella to join the Federation. And—as in the not dissimilar "Lensman" stories—there is an invisible power behind all the machinations, known to the reader but not to the characters, which is presumably to be unmasked in future volumes.

The basic gimmick of the book is no longer new, of course, but there are plenty of nice touches, especially the episodes in which Hanlon poses as an animal trainer. Even so, it doesn't seem to add up

to much, even as pure entertainment. Verdict: old fashioned.

THE PLANET MAPPERS, by E. Everett Evans. Dodd, Mead & Co., New York. 1955. 243 pp. $2.50

This is a pretty good teen-age space-adventure yarn which may not stand up under a board of scientific inquisitors, but is otherwise good fun. Tad Carver and his family are en route to explore a newly discovered planetary system, when a meteor hits their ship and Carver is badly injured. His teen-age sons take over: the eldest, Jak, would-be doctor, patching him up while Jon repairs the ship, lands it, and carries on with the mechanical aspects of exploration.

Before they're through, they're involved with strange three-legged animals—how in hob do they walk? —sentient crystals and flames, a mysterious new element, traces of galactic rovers, and a space pirate. It's not in the Heinlein-Norton class, but it will certainly measure up to some of the other juvenile s-f on the shelves.

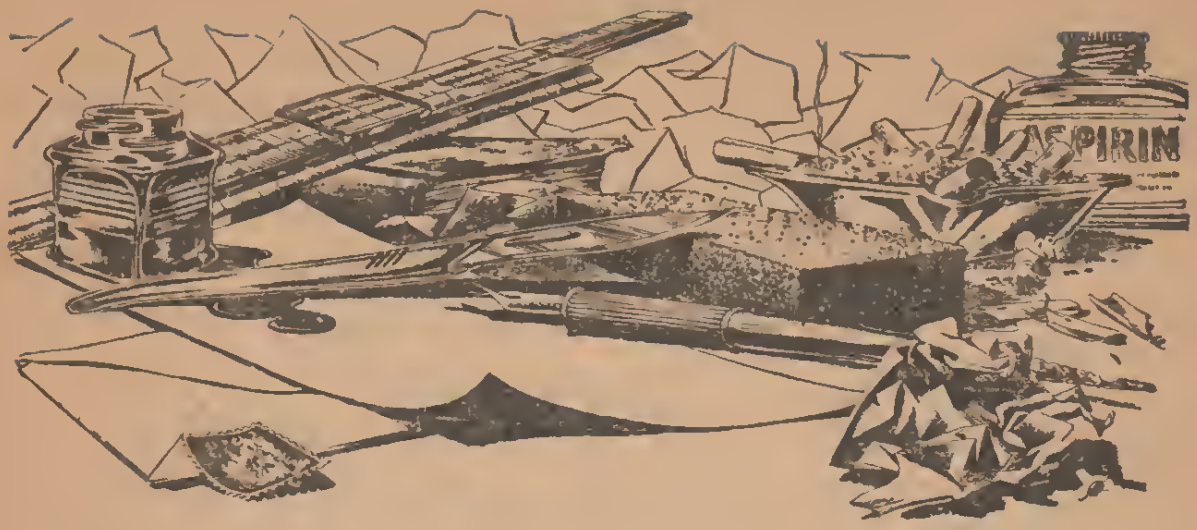
THE SECRET OF THE HITTITES, by C. W. Ceram. Alfred A. Knopf, New York. 1956. 281 + pp. Ill. $5.00

You may have been disappointed, as I was, because this author's very popular "Gods, Graves and Scholars" (1952) turned out to tell you

quite a lot about famous archeologists, but very little about what they discovered. This is a much better book, partly because it doesn't try to cover the entire world and partly because you do learn much more about the Hittites themselves—but by no means enough.

This is the story of a completely lost civilization which in the second millennium B.C. rose to great enough power to turn back imperial Egypt in the battle of Kadesh (1296 B.C.). It was a civilization of still practically unknown natives of the high Anatolian plateau in present Turkey, dominated by a ruling caste of Indo-Europeans somewhere out of inner Asia. It had its own heiroglyphic writing, its own deities and law codes and military geniuses, and—although Mr. Ceram says little or nothing about this—it seems to have discovered the smelting of iron.

Archeologists are only just getting their teeth into the story of the Hittites. But I think you'll find this well written, well illustrated account of their discovery worth your time if you are interested in what really happened in the ancient world, as distinct from the various "lost civilizations" which occasionally slip into science fiction.



BRASS TACKS

Dear Sir:

Yes! I should greatly appreciate seeing in Astounding Science Fiction the series of reports mentioned by you on page 162 of February '56. But . . . in order to be useful to me or any other "serious" researcher they must be documented, referenced, cross-referenced—in the general mode of scientific papers—as much as the nature of the material permits so that I, or anyone else, can obtain all the additional published information on the subject available. I.e., so presented that an "intelligent layman" can obtain full available information on those subjects of which he may be, at the outset, completely ignorant.—N. A. Frigerio, Department of Biochemistry, Yale University School of Medicine, New Haven, Connecticut.

That, sir, we cannot do. References and cross-references require the pre-existence of a system of indexing. The essence of the fact that psionics is unexplored territory is that there is no indexing; we're seeking to achieve the beginnings of an index. There cannot be cross references until we have enough understanding of the subject to say what is relevant to what. "Apple" is near "appelate" in the dictionary—but that's not a scientifically useful correlation! Is levitation related to precognition? Who knows? Then, until we do know more, there can be no technically useful cross-indexing.

Dear Mr. Campbell:

By all means let Astounding give room even to stumbling baby steps of the future science, psionics.

On this line, does psionics sometimes err by trying to make what we'll call the sixth sense, lacking a better term, do the work of one of the

standard five? Rhine's cards, for instance, ask ESP to substitute for sight. The way to tell wave from cross is to look at the cards. I wouldn't try to smell the difference, either. It's strictly a sight job. Maybe Sense 6 is unreliable at that, simply because it's no more fit for a seeing assignment than is the sense of smell.

An obvious hitch: We don't know precisely what the sixth sense—or any of perhaps many senses after five—ought to do. On the basis of folk tales, notorious for kernels of truth, and since another sense in the field isn't known, I suggest trying precognition.

Let a consistent, controlled experiment be kept up over a considerable period, a "sixth-senser" attempting to predict each noon something about noon tomorrow. It needn't be in terms of sight, sound or others of the old line five, either. It might be just mood. I don't know what, not having a sharp sixth sense.

Something might come of it. If only failure, it wouldn't be the first experiment that didn't come off.—Dan Anderson, P.O. Box 954, Chapel Hill, North Carolina.

That problem, my friend, is why I want data on psionic machines!

Dear Mr. Campbell:

Having just purchased the February issue of your magazine and having read the editorial asking for your readers' opinions concerning the publication of reports on work in the psionic-machine field, I would like to go on record as being very much interested in articles of this sort.

I take the stand that if a thing works that obviously can't work, it implies that we are ignorant of the principles involved. One method of dissipating ignorance is to exchange information and ideas. If this is a promising field—which I believe may be true—then we should begin to acquaint ourselves with the phenomena which appear in such research. Later, when we have more knowledge, there will be time enough to state the "whys."—L. Raymond Whitney, 728 Commonwealth Avenue, Boston, Massachusetts.

That's my own feeling on the matter!

Dear Sir:

I hope you will go ahead with the plan you propose in ASF, February, 1956, "The Science of Psionics," to give us a series of detailed and practical reports on psionics research.

You will be doing the field a great service by publishing information about the different kinds of research undertaken, and the different objectives in view. At this stage it would perhaps be best to hold interpretation to a minimum. In time a mind will come along, possibly of the second generation of psi researchers, with scope enough to see the underlying unity. And then people will say, as we say of Darwin: "What took him

so long?"—David Cowles, 410 West 24th Street, New York 11, New York.

The ancient problem of Columbus and the egg, of course!

Dear Mr. Campbell:

With regard to "The Science of Psionics" in your February, 1956, issue of ASF, I believe the interest aroused by T. O. Jothun's letter was due, not to his assertions about psionic machines, but to the almost universal interest people have in ESP in general.

It is my opinion that humanity's feeling of concern in extrasensory matters is as fundamental as the recognized need for religion. I am not saying that one is the other. Rather, both lie in the same general area of the sensed but not understood. In both there is a basic urge to attain a contact with power tantalizingly close, yet scientifically unverifiable.

By all means, let us have as many articles on psionics as space will allow. But, please, do not print any which are written in the style of mysticism. Just give us facts and as much speculative thought as they are worth.

I look forward with great interest to seeing such articles making their appearance in Astounding Science Fiction.—Edgar R. Schott, Benton, Missouri.

The non-mystical, factual—but speculative—approach is what I hope to get.

Dear John Campbell:

I would like to express the interest of myself and at least two other readers of Astounding in the publication of articles on Psionic machines, which you allude to in your editorial in the February issue.

I would like to comment on the attitude of the mystic, to which you referred. As I see it, the mystic will not achieve the control and unity of mind which he values as long as he sees a duality between mind and machine, and rejects the machine. Eventually he must undersand the relationship between mind and machine, and see what makes the machine work, whether it be a can opener or a psionic machine.

A healthy slug of this information was contained in your editorial.—Dick Thomson, 504 Thurston Avenue, Ithaca, New York.

Dear Mr. Campbell:

I'd like to make a remark concerning Mr. Staufenberg's letter—Brass Tacks, November, 1955—which may appear somewhat astounding when placed beside his very conservative estimates of 1000! and 10,000! Numbers of this size can be obtained to an extremely good degree of accuracy using Stirling's approximation for the factorial function:

$$\ln n! = (n+\tfrac{1}{2}) \ln n - n + \tfrac{1}{2} \ln 2\pi + (\text{negligible terms})$$

where 'ln' is the natural logarithm. Or, to make calculations easier,

$$\log n! = (n + \tfrac{1}{2}) \log n - \frac{n}{2.3} + \tfrac{1}{2} \log 2\pi + (\text{negligible terms})$$

where 'log' is the common base—10 logarithm. Using this formula, we obtain the following:

$$20! = 2.5 \times 10^{18}$$
$$1000! = 10^{2567}$$
$$10000! = 10^{35652}$$

So we see that actually 10^{990} is quite negligible when compared to 1000!—Rex H. Shudde.

And for really big ones, how about 100^{1001}

Dear Mr. Campbell:

Our vote on the psionics articles is YES, "our" designating the immediate literate family of three, plus all the people to whom we continually introduce ASF, and all the people who are slayed by our potent points culled from ASF for practically any discussion.

Suggest two divisions of the subject, one especially designed for engineers or people who think like them; *psionics* seems an excellent word for them. The other to aim at people like me who think more in terms of intuition, speculation, philosophy, and communication such as the arts afford. For these I suggest either "hi psi" or *"hi phi psi"*. The artist end of communication of closer and closer to one hundred per cent efficiency, supplements and in some ways surpasses the engineering end; the two viewpoints need each other and I feel no real progress will be accomplished except as they are amalgamated.

In other words, an invention engineer without imagination and an artist without technical ability are equally unproductive. Subjective and objective must be discernible and combined, instead of separated or confused. This enters, and in some cases begins, in the realms of philosophy.

Also, permit the airing of a small gripe—the word-concept "impossible." This word-concept has closed more doors of itself than any one other thing, for it carries the brother-concepts "futile to try," "attainment unprovable, inadmissible, and unproductive," "tragic to attempt"—and so on. All of which are beside the point. No one invents or discovers the new for the prime purpose of proving someone wrong; disproving the accusation "impossible" is way down on the list of values and sometimes actually below zero.

Of course you have to keep the circulation of the magazine up, but aren't you just a bit too sensitive to the barbs of narrowly "scientific" criticizers? Once the impossible has been proved possible, these criticisms simply disappear, and no one is more anxious to have them forgotten than the originators. But perhaps on the other hand, just this sensitivity in Campbell is what keeps his job at top quality so consistently and reliably for so long.—Barbara Chandler,

I agree in full with the basic ideas in paragraphs 2 and 3.

Dear Editor:

re: February, 1956, p. 53
Problem facing the National
Manpower Study Commission

How many trained technicians must be graduated in one year to offset the loss of two men the world lost in the last twelve months—Albert Einstein and Enrico Fermi?

Wrong question, and answer cannot possibly be responsive, for there is no correlation between training given to technicians resulting in graduation and the factors which reveal genius.

Ask rather the opposite: How many high-quality youngsters must be released from specialized training so that there is a reasonable hope of discovering a new Einstein and a new Fermi?

I would make a few suggestions:

1) Label for special study and treatment all shown by ordinary so-called "intelligence" tests who have scores over 150; also and more important all who have highly erratic tests with high spots here and there.

2) Protect all these from the more drastic types of special conditioning, most of all from the *early* portions of military training and "education" (i.e. of schools of education) programs.

3) Have available as widely as possible small sums of money, administered by suitable persons for aid in checking unexpected new discoveries and prompt and proper publication.—William T. M. Forbes, 16 Garden Street, Cambridge 38, Massachusetts.

True genius is, practically by definition, unorthodox. How then can any committee of orthodox educators select them?

Dear Mr. Campbell:

Have just finished reading the last installment of "Under Pressure." Mr. Herbert seems to be a man who knows his submarines very well. Also I might add he seems to have an astonishing knowledge of Chemistry, Physics and Psychology. I have not read such a well put together story of the "Science" school of fiction since "Iceworld" and "Mission of Gravity" by the old master Hal Clement. Second, third and fourth choices in the issue go to "Indirection," "Won't You Walk" and "The Executioner."

I much enjoyed your recent article on satellites by R. S. Richardson. However, there is something afoot in Astronomy that looks much like a minor scandal. It has to do with the planet Pluto and I think may lead us to the discovery of Sol X. The information has been around for a few years (since about 1950 and 51) and I originally did some work about it back in 1952. Unfortunately such things as the Korean war and the lack of large-field photographic telescopes and Blink Microscopes put an end to the project in the speculation stage. Recently I examined the problem again and came to a few conclusions.

The scandal—and the new planet—depend directly on some recent discoveries about the planet Pluto. When Lowell first made his prediction in a memoir in 1915, he assumed for his new planet a mass at least equal to that of the Earth. When Pluto was discovered in 1930, its mass was derived from its effect on the motions of Neptune and was found to be equal to that of the Earth. So far, so good. At that time there did not exist any telescopes capable of showing very much about Pluto as it was too far away. In 1950, armed with the 200 inch telescope, G. P. Kuiper and Milton Humason measured the diameter of Pluto, finding it to be 3550 miles. Now unfortunately Pluto cannot be 3550 miles in diameter and have a mass equal to the Earth. If it did, its density would be about 50-55 times that of water. As a comparison the Earth, the the densest of the Solar planets, has a density of 5.5. Even if Pluto were made of solid Osmium, it could not approach this density. On the other hand, to account for the effects on Neptune, it *must* weigh about as much as the Earth. The divergence here rather makes one think that Pluto is not responsible but that a larger unknown planet might be.

Another line of evidence leads to the same conclusion. Karl Schuette of Munich, Germany, in 1950 discovered a comet family that would probably belong to such a planet. Planets, being comparatively massive are able to close the orbit of any comet that comes near them. Thus a comet which originally had a period of several thousands of years would be influ-

enced by, say, Jupiter and would thenceforth revolve in an orbit whose farthest point from the sun—aphelion—would be only a little outside Jupiter's orbit. Jupiter has a family of 50 odd comets that revolve in this fashion. Saturn has 6, Uranus 3 and Neptune 8. Among Neptune's family is Halley's Comet. Schuette found a family whose average distance from the sun at the extreme point in their orbits was 84.8 A.U. Since the distance of the controlling planet is normally about ten percent less than the maximum of the comet orbits, he placed the planet at 77 Astronomical Units from the sun. One A.U. equals the distance Earth-Sun.

Locating the present position of Planet X in its orbit is a bit of a task. However, by examining the residuals—difference of actual place and computed place—of Uranus and Neptune and assuming that Pluto's mass is negligible, I might venture to place the object in the constellation of Taurus about 5 degrees south of the Pleiades. Due to the relative crudity of the methods employed in this prediction, the position should be taken as nothing more than a starting place for a fairly extensive search. I venture to predict that a search of the region with a wide-field Schmidt telescope might turn up something interesting.

If the object is found, we will of course have the pleasant task of providing a suitable name. I submit that it would be well to follow the scheme used in naming the rest of the planets and use the Greek and Roman pantheon for our name. Given this,

I think a suitable name would be "Erebus," the Greek god of Darkness. He was the father of Uranus, grandfather of Saturn and thus the great-grandfather of Jupiter. Indeed, a name signifying the god of darkness would be highly appropriate for a planet that possibly wanders some seven billions of miles out in the interstellar dark.—Charles M. Williamson, 125 E. 52 Street, Savannah, Georgia.

Interesting indeed! I have heard, though, that Pluto's apparent tiny disk effect could be produced if a nearly smooth, icy, reflective surface existed. It would then reflect the Sun as a Christmas tree ball does—you'd see a bright point of light reflection, rather than the ball itself.

Dear Mr. Campbell:

Every few years mankind goes off on some new kick. When the dust has settled there has been made, usually, some small contribution to the total sum of inherited knowledge. A hundred years ago it was physiognomy. This united with phrenology to produce our modern bastard, psychology. I don't wish to ridicule psychology. I only mean that it should and eventually will simmer down to occupy its rightful portion of man's total activity.

Meanwhile, the nation screams for engineers. I wonder how many of today's engineers and scientists got their basic training in the old Astounding or Gernsback's TWS. I know I did. Present day educators complain that children aren't interested in science. Perhaps we're victims of a cultural lag. I remember the religious ecstasy with which I dreamed of atomic power; the messianic joy which greeted liquid fuel rockets.

Of course, those enthusiasms burn dim after thirty-five or so but what of the coming generation? In spite of the parallels which can be drawn between Washington and Byzantium; the similarity between McArthur and Belisarius, no one can deny that we are living in a golden age of some sort.

How are we to arouse another generation to our own enthusiasm for SF? What can be done about those fading markets? Is there a writer somewhere in this declining west with sufficient skill to do some good old-fashioned *science* fiction? If juvenile literature influences careers in the coming generation to the same extent it did my own, we're due to spend our declining years in (Probability forbid!) a nation of practicing head shrinkers.—G. C. Edmondson.

Well—they do say that it's a swelled head that makes one guy try to prove he's better than another by trying to blow the other fellow's brains out. If the present supply of scientists engaged in weapons research could be spread for other things, by effective application of social science, maybe we wouldn't have a shortage, huh?

Continued from page 7

yond the achievements of any culture that has existed elsewhere.

The error in it, the danger in it, is to hold that this good, sound, and powerful method is the one-and-only method. Dr. Price is blinding himself to the real situation by holding that "unscientific" must necessarily mean "unreal." His ignorance of the many, many instances of complete demonstration of "It can be done," is a consequence of the failure to recognize adequately what the true definition of Science is—that Science is by its very nature limited by its inherent requirement. Its own great strength is its weakness; the scientist *must* work out a way of communicating how-to-do-it, or accept that he has not finished his research. It is an enormously powerful tool, for this makes possible the co-operative endeavor of many men; they can understand each other, and co-operate, because they can communicate clearly and specifically.

But the weakness is that a tool so powerful and useful can, and does, blind a man to the fact that there are things which are real, and need investigation . . . because they are not yet repeatable and communicable.

There are two great areas of research; the Internal Area and the Frontier Area. In chemistry, we have now an exclusively Internal Area; all the possible elements are known, and there can be no Frontier Area of Unknown Stable Elements. There remains an immense,

a stupendous amount of work to be done in working out the consequences of the possible interactions between these known elements. Hundreds of lifetimes of work remains to be done in even the simple inorganic section of that Internal Area. The organic section is colossal; research can continue to explore that Internal Area for hundreds of millennia to come. It is, in fact, an infinite problem, as Isaac Asimov's article on "Hemoglobin and the Universe" showed. But it is infinite, yet bounded, just as there are an infinite number of points within the circle of the letter "O."

The nuclear physicists, on the other hand, are gnawing at the rim of the Unknown. They're studying a Frontier Area. They do not know the elements in that area; they have only a deep conviction that there are elements, rules, and coherent, discoverable relationships. They have —horrid word in science!— Faith that order can be found, but they do not yet know the order that exists.

Dr. Price cannot see order in the psi phenomena, and denies that order exists. Because he does not understand the order, this proves there is none. Because the phenomena follow laws he has not been informed of, they are lawless, and lawless phenomena are impossible, therefore psi is impossible.

I suspect a nuclear physicist would not be anywhere near as harsh in his judgments as Dr. Price, who is a research associate in the Department of Medicine at the University of Minnesota. Dr. Price "knows," as does every man familiar only with mechanical orders of mass, that nothing can go in two different directions at once. A nuclear physicist has experience to the contrary; he's observed a single particle going through two different holes in two different directions at the same time. The nuclear physicist is working out in the Frontier Area, and is a darned sight less sure he knows all the fundamental laws, and knows-for-sure what can and cannot be.

Dr. Price is vastly concerned with the "nonsense" about telepathy, et cetera, not being affected by distance. A nuclear physicist wouldn't be half so disturbed; distance, as a concept, doesn't seem to work very usefully within the nucleus. Oh, you can use it—but it's got some mighty peculiar effects.

The astrophysicist—who is working out on the macrocosmic Frontier Area—is also very much less sure that he knows what the Laws of the Universe are than is Dr. Price. Galaxies collide, interpenetrate, and separate; the astrophysicists have photographs. But . . . they separate like two sticky, viscous masses, drawing tacky filaments from each other as they part. How can masses of stars, acting under gravitational forces, be viscous?

Also, Dr. Price, since his entire experience and education—being in Medicine—is at the gross mechanical level, is not deeply aware of the Observer Effect, as a nuclear physi-

cist is. Given an individual, or a group-of-individuals constituting a System, which can predict the future—the Observer Effect immediately enters the problem. Having observed the future, if that observation is communicated before the observed event, either it will cause a change affecting the event . . . or we are puppets living in a fond delusion that our efforts have meaning. I'm not just sure which concept Dr. Price would favor.

But either way, it means that a prophet, or prophetic group, must either be futile—in a predestination Universe—or appear inaccurate; the greater the reliance placed on the validity of the prophecies, the greater effect they will have in changing the observed events, and the less apparent-accuracy will result. Only someone who is prophesying for the first time can expect to have an opportunity to both communicate his prophecy, and have it fail to influence the prophesied system. (This makes practice difficult!)

Dr. Price suggested that a statistical group of extra-temporal clairvoyants be used to predict the atomic bombing of a city. If the prophetic group functioned, the city would be evacuated before the bombing took place. But then, of course, there would be no point in bombing the city, and the enemy, aware that it had been evacuated, would react to invalidate the prophesy. This would, of course, confuse the issue for the prophets; would they, or would they not, pre-observe an atomic bombing . . . ?

I have, in this, attacked Dr. Price by name; he chose to be the spokesman for the large group of scientists who are deeply dissatisfied with the research Rhine, Soal and others are doing. His article has, moreover, been widely accepted as the thesis of the anti-psi scientists. In this discussion of his article, I have sought to show that the group for which Dr. Price is acting as spokesman have neglected to analyze their own thoughts, wishes, and beliefs sufficiently to recognize what their relationship to the psi research actually is. The problem is a real one; it is inevitable that there be a feeling that funds, equipment, and man-

hours of effort devoted to psi research are being "wasted"; the Internal Area research people can clearly name the nature of the problems they know need attack. It is, inevitably, frustrating and annoying to these entirely honest and sincere men to see time, effort, and money "wasted" on a "useless" line of research, in a time when there is such an acute shortage of highly skilled technical time and effort.

The result of that feeling—and understand that I do *not* imply that it is petty, jealous, or departmental spite, but a fully honest and sincere judgment—is to do much to block funds and man-hours of technical skill from psi research.

But psi research represents any Frontier Research—the areas where no man can say where he is going, what he will find, how long it will take, or whether he will find anything of any value whatever. Psi research is an extreme example—but it is an example of pure, fundamental research; the effort to discover whether or not there is anything to discover, and, if there is, whether it can be discovered at the present time with the available tools of research.

Fundamental research always was, and necessarily always will be, buying a pig in a poke. The trick of it is this: research has a peculiar characteristic—it can use any pig, whatever its condition, that may be in the poke. If it turns out to be a pig dying of hog cholera—fine; we have a subject for research into diseases of swine. If it turns out to be a healthy young shote—fine. Pigs, like Man, are omnivora; we can use the animal for some dietary research. Fundamental research is a pig-in-a-poke business—but with the peculiar added feature that any pig whatsoever is useful!

As a radio-electronics amateur, I've become acutely aware of the immense lack of literature on What Won't Work and Why; I've done articles for *CQ* magazine, and about half of them have been discussions of why things that sound good *won't* work. Research that finds the answer "Nope; you can't do that!" as its conclusion, would appear to be wasted. It isn't. Consequently, not only is any kind of a pig whatever useful to fundamental research —even if the poke is empty, or contains only a rock and some straw stuffing, it's useful!

Dr. Price and the anti-psi people in Science are, basically, opposed to the necessary attitude for extending the boundaries of science—and that attitude, by the inherent definition of the Scientific Method, *must be unscientific!*

THE EDITOR.

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